



This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

- + *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.
- + *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.
- + *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.
- + *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at <http://books.google.com/>



HARVARD MEDICAL LIBRARY
IN THE
FRANCIS A. COUNTWAY
\ LIBRARY OF MEDICINE /







THE
AMERICAN
JOURNAL OF OBSTETRICS

AND
DISEASES OF WOMEN AND CHILDREN

EDITED BY
BROOKS H. WELLS, M.D.

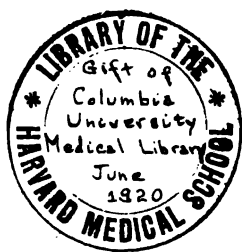
Professor of Gynecology at the New York Polyclinic and Gynecological Surgeon to the New York Polyclinic Hospital; Visiting Gynecologist to St. Vincent's Hospital, New York; Consulting Abdominal Surgeon to the Brattleboro Memorial Hospital, Brattleboro, Vermont; Fellow of the American Gynecological Society, the New York Academy of Medicine, the New York Obstetrical Society, The Society of the Alumni of the City Hospital.

VOLUME LI.

JANUARY-JUNE, 1905

NEW YORK
WILLIAM WOOD & COMPANY

1905



41

THE AMERICAN
JOURNAL OF OBSTETRICS
AND
DISEASES OF WOMEN AND CHILDREN.

VOL. LI.

JANUARY, 1905.

No. 1.

ORIGINAL COMMUNICATIONS.

A CONCEPTION OF THE SPHERE OF GYNECOLOGY.¹

BY
J. WESLEY BOVÉE, M.D.,
Washington, D. C.

After the interim of a summer our work in this society is again resumed and as your presiding officer I am obliged by its rules to initiate it. As a theme for consideration I have decided a circumspection of the realm of gynecology would not be profitless, inasmuch as so much is being said about its being a defunct specialty, its field being usurped by the general surgeon, its being or rapidly becoming purely surgical in character, and the counter-plaint of the general surgeon that gynecology in its constant preying will soon include surgery of the chest, as well as other multitudinous maledictions cast upon it.

I may as well state here I am not in consonance with those who deprecate "this rage for parcelling out the human frame into special territories," being firmly convinced that modern methods of investigation in medicine have laid out so much work to be done that one cannot become expert in the study of disease in greater than a small part of this immense field and hence specialism is a natural result.

¹The President's Address, delivered at the 389th meeting of the Washington Obstetrical and Gynecological Society, October 7, 1904.

It is perhaps advisable to first consider the rise and progress to the present of this special field of medicine. Of course, since the first rudiments of medical practice the diseases peculiar to women have been studied in general with other branches of the science and the artful have found it an inviting field. One has only to read the aphorisms of Hippocrates to be thoroughly convinced of that fact, and if he will but read the sparse history of medicine from the 8th to 16th century he will plainly see how the artful markedly antedated the scientific side of the subject.

Its history is closely allied with that of obstetrics which may be considered as its parent. With the study of obstetrics came a careful study of the anatomy of the female reproductive organs. We find James Douglas, Gabriel Fallopius, Regner de Graaf, Rosenmüller, Bartholini and many others studying various portions of these structures, and due credit has been accorded them by linking their names with those of the anatomical parts they studied. The naming of the oviduct for Fallopius was a monument that will last through eternity. How different with the Alexander, the Battey or some other surgical operation born to blush nearly unseen, "and waste its sweetness on the desert air." Anatomical conditions are permanent. Methods of and materials for doing things change without ceremony.

Rufus, an Ephesian, who lived six hundred years after Hippocrates, was said to have been the first to describe the uterus and its appendages; Albucasis, an Arabian physician living in Spain during the 11th century, carefully described the case of a woman through whose abdominal wall he saw parts of a child escaping by suppuration, he being regarded by various writers as the first to mention ectopic pregnancy. In 1500, Jacob Nufer, a swine spayer of Sigerhausen, Switzerland, did the first abdominal section for this condition. This interesting operation is related by Casper Bauhin in his appendix to the Latin translation of Fr. Rousset's writings upon Cesarean section as follows: "Nufer delivered his own wife by opening the abdomen, and the operation proved successful for both mother and child. The woman was pregnant for the first time and when labor came on and she had already suffered severely for several days, there had gradually assembled at her bedside thirteen midwives and several lithotomists. But all of them together were unable to relieve the poor woman of her child or to mitigate her suffering. Thereupon the husband of the woman proposed to resort to the last means of saving her, and assured her that if she would take

his advice he hoped, by the blessing of God, to bring the case to a successful issue. She gave her full consent, and Nufer persisted further in having the permission of the magistrate to his attempt. This, after some reluctance, was eventually obtained. Nufer next asked those of the midwives who had sufficient nerve for it, to assist him in the delivery of his wife, while the more timid ones were requested to leave the room. Eleven of them chose the latter course, while two of them and all of the lithotomists remained to assist. The husband first besought the behalf of the Almighty, then closed the door, laid his wife upon a table and made an incision in her abdomen in the same way he was accustomed with the swine. He opened the abdomen so cleverly at the first incision that the child was safely extracted. When the eleven midwives outside the door heard the baby cry they desired admission, but this was refused until the baby was washed and the wound closed as in the swine. It healed rapidly. She was later confined four times and bore twins. The child delivered by the operation lived seventy-seven years."

Forty years later, according to Donatus, Bain's abdominal operation was deliberately done for the removal of a long retained fetus. It is described as follows:

"In April, 1540, at *Castrum Pomponii*, commonly called *Pomponischi*, in the Province of the Lords of Gonzaga, not far from the River Po, there lived a woman whose name was Lodovica; but from her great size termed *La Cavalla*. She had been pregnant and the fetus had died in the uterus, while the soft parts had sloughed through the vulva and the bony portions had been retained within her. She recovered and again became pregnant, followed by a rapid loss of flesh, and was reduced to a condition of great danger. Christopher Bain, a traveling surgeon, happened by and offered to attempt to restore her to health for ten golden pieces if successful, and her body if she died. She and her relatives were very poor, and most of the money was raised by their good neighbors. The woman was tied up; he slowly cut through the abdominal wall, including the peritoneum, and at last opened the uterus and extracted a skeleton of a male child; he washed out the uterus with some warm wine and aromatics, and after cauterizing the edges of the wound, closed it with a suture. She recovered and in a short time had other children born in good condition. Later she had four in all.

"Witnesses: Dominus John Baptist Zorzonus and Alexander Begher, Dominus Frederick de Filini and Dominus Leonellus

Zorzonus, and Antonius Maiochus or Mazzuchinis, and several others present at the whole operation."

Paul of Egina, the last of the old Greek medical authors, was the first man to practice exclusively midwifery and the diseases peculiar to women. The practice of having male attendants at parturition was introduced by Ambrose Pare and Clement in Paris. As late as 1827 an English writer, inveighing against such practice, stated: "If the Queen of George III. could be delivered safely of all her children without a male practitioner, surely all the remaining women could do likewise." It is said the late Queen Victoria was the first to inhale chlorform during parturition to demonstrate its safety to the women of the world.

Various specula had been buried at Pompeii and Herculaneum, but they had not been unearthed at the time Recamier, in 1816, introduced the instrument. The wonderful work of McDowell, the Atlees, Marion Sims and a host of others furnish the history of a specialty fighting for existence, against the hidebound opposition of the profession.

What of "The passing of a specialty" as is believed by few and desired by more? The general surgeon who has learned mechanically to do a few gynecological operations, even in an indifferent manner, thinks he has mastered gynecology,—has reached out like an octopus, or perhaps, to be more accurate, vampire-like, and enmeshed within his hold all that really exists of gynecology, aside from hysteria and imagination. These he is willing to leave to the gynecologist. Other far better equipped and better qualified general surgeons are not willing to consider this branch of medicine a specialty because they have large experience in gynecological surgery and feel they can do that part of surgery as well as any other.

Another enemy to gynecology is the general practitioner who, in his zeal to retain his clientele and to make his mark in the community, essays to perform some severe operation upon some trusting and complaining patient, the diagnosis and decision as to treatment having been reached by his mental effort unaided,—perhaps unaided by the barest kind of familiarity with such conditions and such operations. They are constantly doing unnecessary and mutilating operations. I speak advisedly of this and refer most especially to child-bearing patients. Repeatedly am I begged by married women to sterilize them for the most trifling symptoms and later learn my refusal did not prevent the longed-for operation being done by others. The mushroom gynecology

colologist who is working exclusively in gynecology and who has not been properly trained is finding an unusually large percentage of his surgical operations are done for very trivial symptoms, and, in proportion to his lack of experience in the practice of general medicine, a large part of these patients return uncured to plague him or apply to others for relief.

In some institutions of wide influence gynecology has never been allowed to rear its head as a specialty. It has been separated into two distinct classes of cases—one surgical and the other medical. The communities in which these institutions are so powerful have never been blessed with the real features of gynecology, with the result that the delicate refinement and rare judgment necessary for the proper care of some cases has been sought elsewhere and the local profession very properly lowered in reputation.

A few leading gynecologists, becoming restless for further fields for exploration, have expressed themselves as feeling the field of gynecology is too limited for them and therefore they must attack questions of general surgery,—that consequently the specialty would soon be recognized as too limited to receive the undivided attention of the medical investigator. These I believe embrace all the evidence of the passing of this specialty. We will mention the salient points of the argument why this specialty is not passing.

First: The amount of work to be found in the study of any specialty in medicine is enormous. One is impressed with this fact by attempting to maintain a familiarity with even the literature on a few subjects alone. Again, the opportunity for original investigation in this specialty is by no means a matter of the past as a few think. Medicine is constantly changing. New ideas supersede old ones and gynecology furnishes its share of these changes.

The ripe judgment needed in many cases is not as to method of treatment so much as to diagnosis and cause. The specialty of gynecology has done so much for medicine that due reverence for it will forever recognize it as a very prominent factor of a great whole.

With the very imperfect practice of the obstetric art came many pathological conditions that have to be remedied and this is the real reason for much of the gynecological work now necessary. With this, however, has been conducted investigations of environments, of mode of life, of adjustment of clothing, of studious

habits, of mental overwork and many other points in their relation to the development of the female genitalia and their functions. The relations of neurasthenia and hysteria to affections of these organs have furnished some of the best food for gynecological digestion. Is not the exhaustive study of Engelmann on the subject of menstruation among American women an instance of the investigations of gynecology? His comparisons of savage women and those of civilization and for the studies of our own King along this line all must feel a sense of proud ownership. What of the prompt treatment of ruptured tubal pregnancy as portrayed by the operations proposed and practiced by Lawson Tait and Arthur W. Johnstone, of Cincinnati. A nearly universally fatal condition has been changed to one practically benign. And what other wonderfully great work in abdominal surgery has it done? It made abdominal surgery. But a few years ago abdominal operations were almost tabooed in medicine. Ovariectomy, hysterectomy, nephrectomy, in fact nearly all surgery of the abdomen, was worked out by the gynecologist. Was it not America's most noted gynecologist, Sims, that developed cholecystotomy for gall-stones? The technique of abdominal surgery was a valuable contribution it made. Sir Spencer Wells estimated that his work alone in ovariectomy had added thousands of years to the span of human life. The work of Baer and Goffe, relative to removal of uterine fibroids, was a wonderful boon. That of Lawson Tait and Pryor in pelvic suppuration means thousands of lives actually saved every year.

My conception of what is meant by gynecology is the study of the diseases peculiar to women. Necessarily closely related to obstetrics, it inherits from every division of that branch, including the female breast. Perhaps it is that fact that has caused the general surgeon so much alarm lest this child of obstetrics would become restless and predatory, and its migrations alight upon the thorax.

It should be perfectly understood that gynecology is by no means all surgical. I have not been ignorant of the apparent tendency of the unqualified, but enthusiastic, would-be gynecologist to live this mistake. It is in part due to their knowledge of great surgical operations done by great gynecological surgeons, and their consequent *cacoethes operandi*. In the study of the diseases of women or those modified by her sex, one must realize the great modifications resulting from her becoming an element of no small importance in the field of State Medicine. This in-

cludes her fitness for marriage and maternity, her evolution, her degeneracy as regards indigency in its close relations to prostitution, crime and pauperism; her education, her economic relations. Another important point for consideration is correlation of the sexes in higher education. For inscrutable reasons, if any, other than commercial, exist, women have been forced into relations with men that furnish results of doubtful advantage to her as man's co-worker, or as an economic factor in the tension of modern life. In the evolution of society, women are taking a part constantly increasing in activity.

Van de Warker says: "We are living to-day in the midst of conditions which, prolonged to their logical conclusion, mean reversal of woman's traditional place in the social complex. Social and industrial feminism, which is a revolt in favor of free choice and the exemption from the restraints of marriage on the one side, and a demand for a wider and a more liberal field of labor on the other, have made such progress as to claim serious study by Sociologists. The movement has an aggressive literature of a high class, from that of active propaganda to the dreams of Ibsen and the novels of the school of Mrs. Ward. In every civilized country women are separating themselves from men in societies, clubs, leagues and conventions to a degree never known before. Changes such as this movement must profoundly affect woman's spiritual and physical life and fall within the sphere of our action."

We cannot avoid careful and thorough investigation of such subjects. Will the worker in the extensive fields solve such problems, or will it be the gynecologist that will be ablest to assign due weight to certain features of such study and pass over others lightly as they merit. Is it more than reasonable to assert such special work must be done by the specially fitted? Can the one whose whole life work has been mechanical in nature be declared abundantly competent to take up such work? Certainly not. Nor can the general practitioner of medicine be considered superior for such study. Dynamics of the pelvis, the physiology of the female pelvic organs and neighboring structures call for fuller investigation. Surely are the special students, the gynecologists, the ones that must solve such problems.

These points I have called to your notice to demonstrate that gynecology has a side other than surgical—that it cannot be handed bodily over to surgery without taking a retrograde course in the development of the science. I would have you believe.

then, that gynecology must continue to exist as a special study, and that the surgical side alone cannot be called gynecology in the proper sense. The gynecologist of the future must devote great attention to these non-surgical subjects, and at the same time advance the field of surgical gynecology. This latter will be best promoted by teaching and studying prophylaxis courageously. Surely, the knife alone cannot be the symbol of achievement of gynecology. In practice the gynecologist of necessity will be familiar with the anatomy, physiology and abnormal conditions of the rectum. Being in such close proximity, the urinary system in women will naturally fall to the gynecologist and furnishes a field for brilliant investigations, a continuation of the work of some of our most prominent gynecologists. The gynecologist must be competent to deal with any abnormality found in the peritoneal cavity, as complications of ovarian or tubal disease are manifold. The female breast, the organ of life to the offspring, is certainly an organ of reproduction, and the student of obstetrics and its offspring, gynecology, is best fitted to study it in its departures from the normal. In practice this branch of the subject is divided between the gynecologist and the general surgeon, the latter exhibiting a spirit of determination to acquire or preëempt the entire field. To end this prolix consideration of this important subject, I would offer a hope and firm belief that the science of medicine cannot afford to dispense with this field as a specialty, nor will the public interest permit such attempt. As to the future of this specialty I am optimistic, believing as I do that its wonderful achievements are but the skirmish line of the battle to be waged in gynecological study.

THE ROCHAMBEAU.

FURTHER RESULTS IN THE USE OF A MODIFIED CHAMPETIER DE RIBES BALLOON.

BY

JAMES D. VOORHEES, M.D.,

Assistant Visiting Physician to the Sloane Maternity Hospital and Lecturer on Obstetrics at the College of Physicians and Surgeons, Medical Department of Columbia University, New York City.

THERE is no specialty in medicine where judgment and patience mingled with sympathy on the part of the doctor are so greatly needed, and where censure and hard feeling on account of existing complications and poor results from the standpoint of the patient so easily arise as in the science and art of obstetrics. It is no wonder therefore that so many of the profession shirk or drop this branch of medicine as early in their career as they are able.

It is a very difficult matter to determine just when the size of the fetal head is of correct proportion to the capacity of the mother's pelvis to start a labor and so obviate a dangerous operative delivery. It is also very trying to stand by and see a woman suffer excruciating agony without instituting some measures for her relief, expediting her labor without risk to herself or to her child. We know only too well that some are prone to interfere too early and that others are equally prone to simply say "everything is all right" and wait too long. Often whichever way we have decided to act, in retrospect, having lost or injured the infant or having caused deep cervical or perineal lacerations, we have wished that we had acted otherwise in the management of the case.

There is no doubt that within the last few years the number of operative deliveries has been on the increase, and especially is this true in the large cities. Why is this? In the first place, women are marrying late in life nowadays. In 106 primiparæ confined by the writer in private practice, the youngest was twenty-one years old, and the oldest had reached the age of forty. The average age was a small fraction under twenty-nine years. We all know that the cervix and perineum grow more rigid with age. We know that the joints are firmer and become less succulent during pregnancy. We know that the uterine contractions are weaker. We know that the older the woman is, the larger the child, the harder the bones of its skull, the smaller the fontanelles, and the less separated the sutures. No wonder, then, that elderly

primiparæ have more trouble during confinement. In the second place, the city-bred woman—the “hot-house” patient—unaccustomed to discomfort or pain—we know that such a woman makes the worst of patients. She cannot, and will not, endure pain. Her relatives, her husband, and especially her mother, suffer with her. Only too often after a few hours of labor, she simply gives up and begs for relief. We administer sedatives, or the pains die out, the cervix does not dilate, and finally we are compelled to do something. Often we have to do the whole thing—dilate the cervix, rupture the membranes, mould and drag out the head with the aid of forceps, remove the placenta manually, and repair the damage done. We are at our wits’ end in such cases. Again these patients desire the baby to come at a certain date. If one estimates too early a day, woe betide him. Every day she goes over she gets more and more nervous, sleepless and depressed until one has to step in and anticipate nature’s process.

There are a great many measures for starting labor and for shortening its duration, so relieving much suffering during confinement, but none to my mind is of more value for these ends in certain cases than the use of a conical cervical dilator—a Champetier de Ribes balloon.

In an article published September 8, 1900, in the *Medical Record*, the writer reported the first cases in which a modification of this balloon had been used in the service at the Sloane Maternity Hospital. The bags there employed differ very little from those of Champetier. They are identically the same in shape and are made with his principles—to be impermeable, to be inexpandible beyond a certain volume, to be long enough to fill the cervix—in short, to simulate nature’s bag as nearly as practicable. These balloons used at the Sloane Hospital, however, were somewhat different in size from Champetier’s and made stronger in order to withstand the uterine and abdominal contractions, to resist the tension when filled with a fluid, and to permit a certain amount of traction on the tube without rupture. This required a foundation of thin canvas instead of silk, covered by a thicker rubber outside, but more than all that the seams be firmly sewed and cemented, especially where the tube joins the ampulla.

The operation for the insertion of the balloon is very simple, except in a few instances, and can be done with one assistant—the nurse. An anesthetic is employed only in those cases where a preliminary divulsion or a manual dilatation of the cervix is necessary to get enough room for the insertion of the bag, where the cervix is placed so high that it is very difficult to reach, when

the patient is very nervous and excitable, or where the vulvar orifice is very narrow and sensitive. Here light chloroform narcosis is all that is required, for the time consumed by the operation amounts to only a few minutes in the vast majority of cases.

No special introducing forceps or syringe are necessary, although some have been described. I use, however, nearly always a forceps with a pelvic curve and fenestrated blades for the greater ease in the introduction, yet a sponge holder will do. The syringe employed is an ordinary Davidson's. The glass varieties are very apt to break. The metal ones get out of order and cannot be boiled. Of course, the asepsis must be perfect in every detail. It is well to insert the largest size bag possible at the outset and to remember in filling the balloon with the fluid to inflate slowly with slight traction on the tube so that the head, if presenting, will be displaced as little as possible. The patient is left to nature's efforts after the introduction of the balloon unless there is need of hurry when traction can be made at regular intervals on the tube, increasing thereby the strength of the pains and accelerating the dilatation of the cervix. It is only necessary to insert successive bags in cases where great haste is demanded and where the pains are few and far between or stop altogether after the first bag is expelled.

Results.—As before stated, in a previous article, the writer reported the first series of cases in which the balloons were used in the service at the Sloane Maternity Hospital. These were 72 in number out of 2,113 deliveries for the two years up to September 1, 1899. The cases selected had sure indications for interfering, and were those in which other methods had been tried and had failed. In all advantages were obtained and the field of usefulness of the balloons was more definitely determined. This second series I want to report so as to further emphasize the utility of the bags and the great amount of dependence we place upon them, especially in private practice.

These cases also are not selected but I publish all in which balloons were employed, the first set occurring in the first 200 cases of my private practice; the second set occurring in the four years ending September 1, 1903, in 4,272 deliveries, subsequent to those before reported, from the service of the Sloane Maternity Hospital.

In my private practice I used the balloons in 39 out of the 200 cases, or about once in every five.

Dry Labors.—There were 47 dry labors, but in only 4 was a

balloon inserted. One was a primipara. In one the pelvis was slightly flat. In 3 the position was occipito-posterior with the head unengaged. The membranes had been ruptured 15 hours in one, the shortest time, and 38½ hours in another, the longest time, without pains starting. In 3 oxytocics, quinine and strychnine had been ineffectual. One bag was necessary in 3 cases, and 2 in the other one. The pains started at once in 2 cases, and within an hour in the other 2. Complete dilatation was accomplished in from 1 hour and 55 minutes to 3 hours and 30 minutes in these cases. In 2 cases the labors terminated spontaneously with strong pains, and in the other 2 forceps were necessary on account of uterine inertia. All the children did well.

Prolonged and Protracted Labors.—The balloon was used in 4 out of 19 prolonged or protracted labors. Three were primiparæ with occipito-posterior positions, the head being above the brim in 2 cases. In one the pelvis was a flat justo-minor with strong pains, but in the others the pains were weak. In all the membranes had been ruptured for some hours. Oxytocics and chloral had been used in 3 without much if any progress after the patients had been in labor from 13 to 39 hours. The cervix was tough in all the cases and undilated beyond two fingers at the time of introduction of the balloons. One bag was used in each case; No. 2, once; No. 3, once, and No. 4, twice. The bags were in the cervix from 3½ to 6½ hours. Complete dilatation was accomplished in from 5 hours and 15 minutes to 32 hours and 30 minutes. One case terminated spontaneously, one by a low forceps and two by a medium forceps. Three of the babies were asphyxiated at birth but survived. One of the mothers developed a mild phlebitis on the fourteenth day with a moderate temperature for eight days.

Induction of Labor.—In the 200 cases, labor was induced 32 times—a bougie being used in 8, in 5 of which it failed to start pains after a number of hours and it was necessary to supplement it by a balloon. In 24 cases the bag was employed alone. Ten were primiparæ, 19 were multiparæ. The indication for induction of labor in 12 cases was a contracted pelvis; in 2, chronic endocarditis; in 7, prolonged gestation, 6 of whom had lost their babies in previous difficult confinements; in 1, accidental hemorrhage; in 2, albuminuria and threatened eclampsia; in 5, a history of previous difficult deliveries and still-births. Eleven were occipito-posterior positions, 11 were occipito-transverse positions, 2 were breech cases and one a case of twins. No child was more

premature than 8 months except in the cases of threatened eclampsia and accidental hemorrhage. The cervix was closed in 2 cases, long and immature in 12, and in the rest fairly firm, undilated above two fingers. One bag was used in 24 cases; two bags in 4 cases, and three bags in 2 cases. The pains started at once in 12 cases after the introduction of the bag; the longest time before the pains started was 65 hours. In this case the cervix was closed, long, and immature. No. 1 bag was left in the cervix after divulsion for 36 hours with no tractions on the balloon, and the second balloon was not inserted for 24 hours longer. The average time for starting labor was five hours and fifty-five minutes. The shortest time the bag was in the cervix was 2 hours; the longest, 36 hours. The time from introduction of the balloon until complete dilatation varied from 6 hours to 84 hours. The longest actual labor was 39 hours, this being a case of uterine inertia.

Manual dilatation was undertaken to supplement the bags in only one case—that of a threatened eclampsia. Fifteen patients were delivered spontaneously; 2 by breech extraction, 4 by high forceps, 5 by medium forceps, 2 by low forceps, 1 by basiotripsy on a non-viable fetus whose mother was on the verge of eclampsia.

All the children were born alive except in this craniotomy case. Two subsequently died—a non-viable child in the case of accidental hemorrhage and one of a case of premature twins.

In two cases there was temperature—in one 101° F. on the second day, and in the other 101.6° F. on the third day. The cervix was in good condition at the time of discharge in all but four cases, where a moderate bilateral laceration existed with some eversion and erosion of the lips.

Placenta Previa.—I have used the balloons in two out of three cases of placenta previa occurring in my private practice. Both were of the marginal variety in primiparæ. Both were in good condition and near term. One had had hemorrhages at the fourth and fifth month, but in the other no bleeding occurred till the day seen by me. The cervix was tough in both, dilated to one finger plus, and into which a No. 3 balloon was inserted, controlling the hemorrhage. Pains started immediately in both cases but were weak. After the bag was expelled the membranes were ruptured with no further bleeding to speak of and the patients were subsequently delivered by a medium forceps without injury to mother or child.

My third case of placenta previa was delivered by an accouchement forcé, it being a central variety. The child, however, was lost and the cervix was deeply torn bilaterally.

It may seem redundant to cite another set of cases, but I trust the Society will pardon the many statistics.

In the four years to September 1, 1903, in 4,272 deliveries in the service of the Sloane Maternity Hospital, the modified Champetier de Ribes balloons were used 209 times.

Dry Labors.—During this time there were 626 dry labors, but the bags were used only in 50. In these cases no pains had started and the membranes had been ruptured from 3 to 96 hours before a bag was introduced. The early introductions of the balloon were due to the poor condition of the child, which happened in 14 cases. The average time from the rupture of the membranes till the bag was introduced was 23 hours and 32 minutes. Twenty-one were primiparæ; 29 multiparæ. Three cases had justo-minor, and 2 had flat pelves. In 13 cases the occiput was posterior; in 8, the presentation was a breech; in 1, a brow, and in 1, a shoulder. In all but 8 of the vertex cases the head was above the brim.

In 13 cases oxytocics had been given without starting the pains. In 23 cases the cervix was tough. In 6 cases, two bags were used, and in the rest only one.

The pains started immediately in 35 cases. In 3 cases the first bag came through without starting any pains. The longest time in the rest till the pains started was 6 hours. The bag was in the cervix the longest time 19 hours and 25 minutes; the shortest, 12 minutes. In 41 cases the pains were strong. The longest time till complete dilatation of the cervix was 25 hours and 45 minutes; the shortest, 58 minutes. Thirty-five labors terminated spontaneously; 5 by a low forceps; 2 by medium forceps; 3 by high forceps; 3 by breech extraction. Four children were still-born, 2 high forceps cases, a version case and a breech extraction case, in all of which the child was in poor condition at the time of the final operation. Two seven-months' babies died in a few days after birth from prematurity.

There was one case of puerperal infection which recovered.

Protracted or Prolonged Labors.—In 238 protracted and prolonged labors the balloons were used in 48, all very severe cases. Thirty were primiparæ; 11 were occipito-posterior positions, 1 a face, and 4 breech presentations. In only 4 cases was the head engaged at the time of insertion of the balloon.

The causes for the delay were some deformity of the pelvis in 12 cases, a tough cervix in 34, and in the rest uterine inertia or large children. In 30 cases the membranes had already ruptured; in 36 cases oxytocics had been given, and in 19 chloral or morphine. The shortest time from the beginning of the pains till the introduction of the bag was 10 hours—an eclamptic—and the longest time was 76 hours. One bag was used in 38 cases, two in 7 cases, and three in 2 cases. The shortest time the bags were in the cervix was 24 minutes; the longest, 15 hours and 20 minutes. The shortest time till complete dilatation of the cervix was 36 minutes; the longest, 35 hours and 38 minutes. In one case the cervix, showing senile atrophy, could not be dilated and the patient was delivered by a Cesarean section.

The condition of the child when the balloon was introduced was poor in 12 cases. The mother was exhausted in all. One had a pneumonia, 1 had endocarditis, 2 were insane, 3 had albuminuria, 1 had eclampsia, 1 had a double uterus and vagina, and another had a pyosalpinx with a temperature of 103°.

Of the 48 cases, 24 terminated spontaneously; 11 by a high forceps; 4 by a medium forceps; 2 by a low forceps; 2 by a breech extraction; 1 by version; 2 by craniotomy (one on a hydrocephalic fetus, and the other on a dead child); and 1 by Cesarean section.

Eight children were still-born. One was very premature; 1 was syphilitic; 2 were atelectatic; in another the cord prolapsed, the after-coming head stuck at the brim too long in another, and in the two mentioned above a basiotripsy had been done. One child died two hours after birth atelectatic, and another died in forty-eight hours from cerebral hemorrhage. Seven patients had fever—1 from a pneumonia, 1 from a pyonephrosis, 1 from a pyosalpinx; the others from mild infections. Considering the number of these cases which had been handled before coming to the hospital the number of temperatures was very few.

There were two deaths—one from purulent peritonitis due to a ruptured pyosalpinx, and the other from the shock of a hysterectomy for a rupture of the pregnant uterus in the case of double uterus and vagina.

Induction of Labor.—In the 4,272 deliveries, labor was induced 147 times, in 111 of which the balloon was used. As 10 of these were cases of placenta previa which will be considered separately, our number of induced labors for other causes is reduced to 101. Forty-three were primiparæ and 58 were multiparæ. The indica-

tion for 30 cases was a contracted pelvis; for 15, eclampsia; for 14, hyperemesis and severe toxemia; for 9, chronic endocarditis; for 9, accidental hemorrhage; for 9, prolonged gestation; for 5, increasing albuminuria in large amounts; for 3, phthisis; for 2, previous difficult labors with still-births; for one each, chorea, melancholia, large hemorrhagic multilocular ovarian cyst, and syphilis with a temperature of 105° F. Twenty-four were occipito-posterior positions, 7 were breech, and 3 transverse presentations, 1 a twin, 1 a brow, and 1 a face presentation.

The labor was started in 16 before the viability of the child, and in 12 during the seventh month. In the remaining 73 after the eighth month. In 5 a bougie had been inserted for a number of hours without starting the pains. In 19 a preliminary divulsion of the cervix or packing the canal with gauze was necessary before there was room enough to introduce a balloon. The cervix was long, immature and dilated to one finger or less in 81 cases. In the remaining 20 there was enough dilatation to admit larger balloons than No. 1 at the onset. In 44 cases only one bag was used, but in 4 of these a bougie was introduced later to strengthen the uterine contractions. In 41 two bags were necessary; in 15, three bags, and in 1, four bags were used. In 37 cases pains commenced at once. The longest time after the introduction of the bag until the pains started was 50 hours. This was an albuminuric case. The average was 6 hours and 13 minutes. In 5 cases there were no pains, and in 11 others the precarious condition of the mother demanded more haste so that the dilatation was completed by the manual method. The shortest time from the introduction of the bag until complete dilation was 1 hour and 50 minutes; the longest time, 79 hours and 48 minutes; average, 25 hours and 56 minutes.

Of the 101 cases, 44 terminated unaided. In the others, 3 were completed by a low forceps, 9 by a medium forceps, 13 by a high forceps, 3 by a breech extraction, 12 by podalic version, 3 by version and craniotomy, 3 by a basiotripsy, 11 by an accouchement forcé, and 1 by Cesarean section.

Thirty-four babies were still-born. Subtracting the 16 infants which were non-viable, we have a total of 18, or a little less than 18 per cent. Five of these died during labor, 3 of which were delivered by craniotomy. Three died during the delivery after a version, 5 during an accouchement forcé, 2 from a prolapsed cord, 1 during a high forceps operation, 1 died from accidental hemor-

rhage, and 1 baby was syphilitic. Three children died from atelectasis within a few days after labor.

There were 12 maternal deaths—three from eclampsia, 4 from hyperemesis and severe toxemia, 2 from phthisis, 1 from melancholia followed by sepsis, 1 from rupture of the uterus in an eclamptic, caused by terminating the case early by an accouchement forcé, and 1 after a laparotomy on the second day post-partum for the removal of an immense hemorrhagic multilocular ovarian cyst. In 9 of these deaths the patient was practically moribund on admission. Twenty-two cases had temperatures above 100.6° F., but only 4 were septic. One case died of sepsis, preceded and accompanied by melancholia as mentioned above.

Placenta Previa.—The balloons were used in 10 out of 61 cases of placenta previa occurring in the four years. Only one of these cases was of the complete variety, but in all there had been moderate to severe bleeding. Two were primiparæ.

The condition of the mother was fair in all but one case at the time of insertion of the balloon. This patient had to be infused before anything operative, causing shock, could be done. One pregnancy was six and one-half months along; 4 seven months; 3 eight months, and 2 were near term. The cervix was firm and undilated beyond two fingers in all the cases. Two bags were used in 4 cases, and only one in the other 6 cases. Pains were well started within two and one-half hours in all but 1 case. In this one the bag was pulled through the cervix without starting any pains. In 4 cases the bags were supplemented by slight manual dilatation. Three cases terminated spontaneously; 1 by breech extraction, 1 by a high forceps, 1 by a medium forceps, 3 by version and extraction, 1 by version and craniotomy. Seven infants were born alive and survived. One of the still births was a non-viable child and in another, the craniotomy case, the child had died. The third died of atelectasis within twenty-four hours. All the mothers recovered. Three had some slight infection—sapsremic in character.

What have we learned from a study of the above statistics?

(1) That the best hydrostatic dilator of the cervix is a modified Champetier de Ribes balloon, because it is the most like nature's bag. No other variety has been used at the Sloane Maternity Hospital in the past seven years, but during this time this balloon has been used on 281 patients in all kinds of cases, to 73 times for manual dilatation of the cervix. These statistics with the fact

that I have used it as often as once in every five cases in private practice show how much reliance is placed upon the balloon.

(2) We have found that in cases where the membranes have been long ruptured, or in dry labors where the child is in bad condition, the balloons, with very few exceptions, quickly and surely start strong pains, rapidly dilate the cervix, and the labor soon terminates. Besides, in the cervix they plug the os and prevent the loss of more liquor amnii. In these cases the fetal mortality is greatly diminished, especially in breech presentations. For in the management of such complication one is not compelled to pull down a foot so soon and thereby early and prolonged pressure on the child, and especially the cord, is avoided. The balloon also prepares the cervix for the passage of the after-coming head.

I believe that there is a rule now at the Sloane Maternity Hospital that a bag should be introduced into the cervix if the pains do not start within twenty-four hours after the rupture of the membranes, or earlier, if the child shows signs of compression, by a slow, irregular, or feeble fetal heart; by an umbilical souffle, or by the passage of meconium.

There was no mortality of the babies in my private cases, and only 12 per cent. in the hospital cases. Considering this includes many very premature children and that many major operations were done for the final delivery, this percentage is very low.

(3) In protracted labors we have found that the bag has a large field of usefulness. Even in cases where such protraction is due to some obstruction as posterior positions, small pelves, large children, abnormal presentations, the balloon not only strengthens the pains, but also rapidly shortens the first stage so that the woman is not too exhausted for the final effort, and so that if operative procedures, forceps or version are necessary, the cervix is in better condition, softer and the os wider, for the delivery. If the delay is from inertia, as in twins, hydramnios, or from whatever cause, the bag stimulates strong uterine contractions when oxytocics fail. When the cervix itself is the barrier, whether from spasm notwithstanding the use of morphine and chloral, whether it is tough, rigid, or immature, whether it is the seat of congenital or pathological changes, then something mechanical is necessary and the balloons are of great value. In almost all of these cases a spasm of the cervix is relaxed, the cervix itself is softened and dilated, the pains are strengthened, the birth is hastened, and in many labor is terminated which otherwise would require manual dilatation and instrumental aid. Fifty per cent. of the cases of

protracted labor in the series at the Sloane Maternity Hospital terminated spontaneously after the use of the bag.

I will admit the balloon will not soften all cervixes and in a great many cases requiring haste, its action is too slow. In such cases the manual method is employed with more immediate results. In my private practice where labor has dragged on I have lightly stretched the cervix by the fingers again and again, and in consultation have used the Edgar method of rapid dilatation for the sake of mother or child in an emergency. This method of manual dilatation, however, is painful, demands anesthesia, and the cervix most often yields only by tearing. I certainly believe that much harm both at the delivery and subsequently, can be avoided if we are in less of a hurry and employ a bag instead. On the other hand, manual dilatation has its justified place and should be used in protracted labors where the bag is ineffectual or too slow. In the 238 protracted labors in the Sloane series it was employed twenty times to forty-eight for the balloon.

Rarely incision of the cervix is necessary. It is demanded only in cases of cicatricial and organic changes and when in dilating a tear has started on one side of the os. Dührssen's incisions at other points in the cervix make smaller rents—not a deep one which will endanger the lower uterine zone.

Our mortality in protracted labor for the mother and child in the balloon cases at the Sloane Hospital is rather high, but both in the large majority of cases were in poor condition when they first came under our supervision.

(4) We have learned that the bag is the most reliable of all methods for inducing labor. It has started pains again and again where a bougie has failed. The pains begin sooner and are stronger than when a bougie is used. The cervix softens earlier and dilates quicker, so that the labor is shorter than when other methods have been employed. In the four years at the Sloane Hospital the bougie has been used alone six times to one hundred and eleven times for the balloon. I have used the bougie but three times by itself in private practice for inducing labor, and in one of these cases I had my only still-birth in a viable child. The greatest danger in the introduction of the bougie is that of rupturing the membranes. This happens again and again, no matter how much care has been employed. When this accident has occurred the pains are apt to start immediately and recur at too frequent intervals—often only a minute intervening,—the cervix dilates very slowly, the child is compressed and is

soon in jeopardy. There are some cases, however, where the bougie is used in preference on account of the greater ease in its introduction. This is true where the cervix is long and but little dilated and where we are afraid to give an anesthetic; for instance, in bad heart cases. Also we often use a bougie when we fear a divulsion will start cervical tears.

A favorite procedure of some obstetricians is to combine a bag and a bougie. Cragin inserts a bag first and follows it with a bougie. His plan is to introduce a bag at 9 A.M., pulling it through the cervix at 2 P.M., and then if labor is not progressing rapidly he inserts a bougie. He claims the pains are stronger by this method and that in the large majority of cases he can terminate the labor before midnight. Norris, of Philadelphia, on the other hand, prefers the bougie at the outset and, when there is enough dilatation, he inserts the largest size bag. He then, if necessary, attaches a weight to the tube or makes traction on it with the purpose of hastening the dilatation. It is my practice to give a woman a good night by a sedative before inducing labor and then if she is a primipara and if I think the pains will be slow in starting, by reason of a long, undilated cervix, to introduce a bag at about 10 P.M. At the same time I give her gr. xxx of chloral by rectum, so that she will have another night's rest and will be prepared for regular labor pains the next day. I make no tractions on the bag, nor do I introduce another bag or a bougie later, unless the pains are few and far between, or unless haste is demanded. By this plan labor will often be completed on the following day. In a multipara, however, near term the pains very frequently start at once so that I prefer to give the patient a good night's rest and to introduce the balloon at 9 A.M. By this arrangement such a case is usually finished by evening.

In contracted pelvis dilatation is normally slow. For induction of labor for this complication the bag is especially advantageous, as it causes more rapid dilatation; the head therefore can earlier engage, and one can sooner perform the major operations for delivery if they become necessary.

In albuminuria and eclampsia the uterus is very inert and a bougie is often useless in starting labor. If a bag is employed, on the other hand, even though there are no pains, dilatation can be brought about by traction at frequent intervals on the tube. The prevalent opinion is that in eclampsia any method for emptying the uterus is too slow, except an accouchement forcé. This was the idea held at Sloane Maternity Hospital for many years.

In the four years there, the period of the 4,272 cases of this article, there were 49 cases of ante-partum eclampsia. An accouchement forcé was done in 31 cases. Two of these died of a ruptured uterus and in a great many of the others the cervix was badly torn into the lateral fornices. The bag was used as a preliminary measure to delivery or to a subsequent accouchement forcé in 15 cases with far less damage to mother and child. Everyone knows that immature and many long rigid cervixes cannot be rapidly dilated, and when an accouchement forcé is done the cervix tears badly, often into the lower uterine segment, the patient has shock added to her toxemia, and no wonder she dies. The prospect for saving the child is also very small. I certainly believe that the shock of an accouchement forcé is only too often the cause of the mother's death, even though the uterus is uninjured. If a bag or a succession of bags is used as preliminary measures many advantages are gained, even though a few hours are lost. By this delay the cervix is softened, the internal os opens up, shortening the canal, and when an accouchement is decided upon, it can be done more readily, the cervix tears less, and we are more apt to save the child. This is now the plan at the hospital—to insert a bag at once, make traction on it at frequent intervals, start elimination by stimulating all of the excretory organs, and reduce arterial tension, temporizing only as long as we think the patient's condition warrants, or until the cervix is soft enough to stand an accouchement forcé without tearing it and with little shock to the patient. No uterus will be ruptured following out carefully this plan. On the patient's admission to the hospital an accouchement forcé is only done at once where the cervix is soft, or when her condition demands the increased risk.

In my private practice 52 per cent. of the induced labors by means of the balloon terminated spontaneously. There was no maternal mortality in the 29 cases. Two non-viable infants were lost and one premature twin, making practically no fetal mortality.

In the Sloane set of cases 43 per cent, terminated spontaneously. Twelve per cent. of the women died from different causes, all were about as severe cases as one will ever have to deal with,—inductions of labor for eclampsia, toxemia, phthisis, etc. The fetal mortality was 25 per cent., excluding non-viable infants. In many of these we could expect nothing better on account of the poor condition of the mother, the toxemia, and lack of oxygen

the child was subject to, its prematurity, and the difficult operative measures necessary for the delivery.

(5) From the results of these two series of cases, private and hospital, we find that the balloon is very reliable in the management of placenta previa. The immediate danger of this complication for the mother is, of course, hemorrhage and it is our aim in the treatment of these cases to stop this bleeding as soon as possible. I believe that the cause of maternal death in placenta previa is the excessive hemorrhage only in neglected cases, but that most of the deaths are due to a ruptured uterus. Our statistics will substantiate this statement. In 59 cases of placenta previa of the hospital series there were 4 deaths of the mother, one of these women was exsanguinated on admission, would not respond to stimulation and intra-venous infusion, and died. The cause of death in the other 3 cases was a ruptured uterus. There is no doubt that the lower segment of the uterus is more friable at the site of placental attachment than when the placenta is normally placed, and when, in our eagerness to get down a foot or extract a child, the cervix is torn and the tear runs up into this tissue, there results a ruptured uterus with its accompanying shock and increased hemorrhage, which soon causes the death of the mother. This complication we fear more than anything else in the management of placenta previa, and to escape it many a child is lost. For after a foot has been brought through the cervix, controlling the bleeding, we wait for pains and softening of the cervix before extracting the child.

From our statistics we learn that for marginal and partial placenta previa the modified Champetier de Ribes balloon acts in an ideal manner, and I believe that when we have more courage we will employ it in more cases of the complete variety. In both series I have reported but one such case. In this the mother was in extremis when admitted to the hospital, but reacted to an intra-venous infusion while a bag was in the cervix, and was subsequently delivered successfully.

Why do we recommend the use of a balloon in placenta previa? Because it stops the hemorrhage and prepares the case for a delivery which will be more easily performed and in which less damage will be done to both mother and child. How does the balloon act to accomplish this? If the membranes are ruptured, the bag is simply inserted into the amniotic sac, and acts as a plug, pressing the separated portion of the placenta against the uterine wall. If the membranes are intact,

or the placenta is over the os, there is probably some separation of this organ, but the bag presses against the open uterine sinuses and the hemorrhage is in this way controlled. The balloon then lying in the cervix is an excellent tampon, although in some cases traction on the tube is necessary before the bleeding entirely stops.

In placenta previa the bag accomplishes more than simply controlling the hemorrhage. It starts pains, softens and dilates the cervix, and prepares the way for an easier and less dangerous delivery, for, when the largest balloon comes through, the forceps can be readily applied or the hand can be introduced into the uterus, the child turned and extracted without difficulty. This is quite a different task from that of doing a Braxton-Hicks version through a tough undilated cervix.

Finally, the child is more apt to survive by the use of the balloon in placenta previa. Take a case with a rigid cervix where a version is done at once. The hand is quickly forced through, of necessity tearing it, the membranes are ruptured, and the foot of the child grasped and brought down. In our haste we separate a considerable portion of the placenta, the cord may be dislodged, and to control the hemorrhage traction is made on the foot. What happens? The child, deprived of the required amount of oxygen, and considerably compressed, at once shows signs of asphyxia. We then have this problem to solve. Shall we extract the baby to save its life at the risk of increasing the cervical tears, which may involve the lower uterine segment or the broad ligament, or shall we wait, slowly dilating the cervix. If we take the former alternative, we may save the child, but we often lose it and the mother, too. If we adopt the latter plan, the child is certainly lost. I claim that we would not be placed so often in this predicament if the largest balloon had been used in the beginning, for, after this bag comes through the softened and dilated cervix, the version can be readily done, the child can be extracted at once, and the mother runs less risk by the operation. I might add here that for placenta previa the gauze tampon is an efficient adjuvant temporarily, when we have not the bags with us, or during the time required for getting ready for their introduction.

In both series of placenta previa cases, in private and at the hospital, where the balloon was used, there was no maternal mortality. In the private series both the infants survived, and in the hospital cases only 22 per cent. of the babies were lost. This per-

centage is very low considering that four out of the nine babies were under eight months' gestation.

My plea, therefore, in the care of placenta previa patients is to use a balloon as a preliminary measure in all possible cases. When, however, the cervix is soft and dilatable and the mother cannot stand the delay,—when the bag is unnecessary or inadvisable,—then an accouchement forcé can be done at once.

OBJECTIONS TO THE BALLOONS.

(1) They may rupture the membranes. This happens rarely, and it makes little difference if they do. The fetus suffers some, but little, as the waters cannot all drain away. If the fluid does escape, the dilatation is rapid enough to do little harm.

(2) They may separate the placenta—only in placenta previa. But the bag either arrests the hemorrhage on being filled or when traction is made on the tube.

(3) They may increase the tension in the interior of the uterus. It is not great and no harm is ever done. It is not painful to the patient and never ruptures or weakens the uterus.

(4) They may displace the presenting part. This is possible, but by slow distention of the bag and by watching the presenting part during the distention, we can keep it in place. This accident occurred occasionally in the above series but was easily rectified. It is more apt to occur in cases of flat pelvis.

(5) The cord may prolapse. For this to occur the cord must be long or loosely coiled about the neck. This accident has happened a few times, but so far as I have been able to learn, was not responsible in any of these cases for the baby's death. In my first article I reported a case where it was detected too late to save the child.

It is a good rule to always examine carefully when a bag is expelled, for the cord may come down. If this does occur the proper management should be at once employed.

(6) Sepsis. The balloons can be boiled. If the aseptic technique is correct there should be no infection. There were a few cases of sepsis reported in this article, but I cannot attribute this complication to the use of the balloon.

CONCLUSIONS.

1. The modified Champetier de Ribes balloon is the best artificial hydrostatic dilator of the cervix.

2. The balloons are especially effective in dry labors to start pains.

3. Labor, if prolonged and protracted from whatever cause, is hastened and in a large percentage of the cases terminates spontaneously after their use.

4. The balloon is the best and most certain method of inducing labor for all indications.

5. In eclampsia and in placenta previa the balloon has a field of usefulness which diminishes markedly maternal and fetal mortality.

Sloane Series.—4,272 cases (September 1, 1899–September 1, 1903). Dry labors, 626 cases; bags employed, 48 cases. Protracted labors, 238 cases; bags employed, 50 cases; manual dilatation, 19 cases. Induction of labor, 147 cases; bags employed, 111; bougie alone, 6; tampon of cervix alone, 1; scarification vulva, 1; accouchement forcé, 28. Total number of bag cases, 209. Total number of manual dilatation cases, 73.

Eclampsia.—65 cases; 14 post-partum; 3 spontaneous delivery; 6 bags alone used; 11 bags followed by version or forceps; 31 delivered by an accouchement forcé. Deaths—mother, 7; 11 per cent. mortality. Causes of death—pulmonary embolus, 1; ruptured uterus, 2; purulent peritonitis, 1; hemorrhage hepatitis and toxemia, 3. Child, 32; 49 per cent., including all cases; non-viable children, 19; true mortality, 29 per cent.

Placenta Previa.—61 cases; 7 delivered normally; in 1, membranes ruptured; 4 delivered by breech extraction; 3 by forceps; 19 by version; in 10 balloons were used; 17 delivered by accouchement forcé. Deaths—mother, 4; 6 per cent. mortality. Causes of death—3, rupture of the uterus; 1, hemorrhage (moribund on admission). Child, 23; 35 per cent. mortality; non-viable children, 4; real mortality, 29 per cent.

Private Series.—200 cases; dry labors, 47 cases; bags employed in 4. Protracted labors, 19 cases; bags employed in 4. Induction of labor, 32 cases; bag employed in 29; bougie alone, 3. Placenta previa, 3 cases; bags employed in 2; accouchement forcé, 1. Total number of bag cases, 39. Total number of manual dilatation cases, 15.

Accouchement forcé, 3; eclampsia, 1; placenta previa, 1; protracted labor, 1.

Manual dilatation lightly, 11.

159 WEST 59TH STREET.

ACCIDENTAL PERFORATION OF THE UTERUS DURING
CURETTAGE—A CASE WITH BOWEL INJURY AND RE-
SECTION OF FOUR FEET OF SMALL INTESTINE.¹

BY

WILLIAM HESSERT, M.D..

Surgeon to Cook County, German and St. Francis Hospitals (Evanston);
Instructor in Surgery, Chicago Polyclinic,
Chicago, Ill.

THE literature relating to accidents during curettage dates back to the time of the first use of the curette by Récamier. From that time to the present, accidents of various kinds have been reported. The perforations were caused by any and all of the different instruments that are inserted into the uterine cavity. The accident either was followed by no ill effects or resulted in death. Between these two extremes all varieties are represented. Perforation of the uterus during curettage has occurred in the hands of experts. More frequently, probably, the accident has happened as the result of inexperience and carelessness. The expert recognizes at once the making of a false passage and institutes the proper treatment. The novice may remain forever in ignorance of what he has done or come to a horrible realization when he pulls out, not membranes, but gut.

In spite of warning and teaching to the contrary, curettement is generally considered by the rank and file an innocent, simple and easy operation. It is said to belong to minor surgery, and every beginner performs it.

Success in a number of cases may lull a man into a state of security and contempt for such a little operation, until suddenly he is brought to a proper realization by the mischief he has done.

The object of this paper is to report a case of accidental perforation, to present a résumé of the literature and to call attention again to the danger that may lurk in a seemingly simple operation like the one in question.

History of Case.—Mrs. B., age 46. Has had 6 children and several miscarriages; the last one a year ago required curetting. She was a hard-working woman, and her general health was fairly good. She had been a few months pregnant and again

¹Read by invitation before the Chicago Gynecological Society, November 18, 1904.

aborted. Her family physician, a man of excellent general ability, was called, as the woman was flowing. Her doctor first tried to empty the uterus without an anesthetic, but could not finish on account of pain. Next day, under chloroform, he proceeded to finish the operation. A Goodell dilator was introduced into the patulous cervix and the blades separated. A placental forceps was then introduced, presumably into the uterine cavity, and something which was felt was pulled down. This proved to be small intestine, whereupon the same was hastily replaced and the vagina packed with iodoform gauze. The author saw the patient several hours later in consultation, and had her taken at once to the hospital. Her condition was fair; there was little shock; she looked somewhat pale and anxious. Pulse 120, temperature 101° . Abdomen flat, soft and not tympanitic; slight tenderness over lower portion. No vomiting and little pain. She was prepared for laparotomy, and the abdomen was opened about seven hours after the accident. A few clots of blood were sponged out of lower abdomen but there was no free fecal matter. The bowels were fortunately empty. On pulling up the coils lying in pelvis they were seen to be detached from the mesentery for a considerable distance. The bowel itself was uninjured except for slight bruised areas here and there. One portion of bowel was seen to enter a rent in the anterior surface of uterus, whence it was easily pulled out. The mesentery showed no bleeding, although large arteries and veins had been torn across. The gut was torn away at its mesenteric attachment, no portion of the mesentery adhering to the bowel.

There being no other injuries, a resection of the injured portion was made and an end-to-end anastomosis done with a Murphy button. The free edge of mesentery was sutured with a running catgut suture. Four feet of bowel was removed.

The uterus was retroflexed, somewhat enlarged and firm in consistency. On its anterior surface was a transverse slit which led diagonally through the wall terminating at point of angulation. It was large enough to admit the finger. The uterine cavity was empty. The perforation was sutured with interrupted catgut and the abdomen closed without drainage.

Subsequent History.—The patient made an uneventful recovery. Wound healed by primary union. Button passed on the tenth day. No further uterine symptoms, and at this writing the patient is quite well.

Remarks.—The perforation was due, not to any abnormal soft-

ening of the uterus, but to a failure to appreciate beforehand the direction of the uterine canal. The uterus being retroflexed, the dilators, with their curved points, were introduced, under the impression that the fundus was forward. Hence the piercing of the anterior wall at point of angulation.

In the second place the placental forceps was used and something was grasped in the dark without it being known what was in the hold of the instrument. The gut, on being pulled through the false passage, was stripped from its mesentery. The arteries and veins, owing to their severance by torsion, did not bleed, beautifully illustrating this long-known surgical phenomenon.

Is there such a thing as temporary paralysis of the uterus?—If, while passing a sound into the uterine cavity, the instrument slips to an abnormal depth—slips away into unresisting space—does that mean a perforation? It is always with a sense of relief that one feels resistance on passing sounds in a certain class of cases. Beuttner reported some cases where after distinctly palpating the somewhat enlarged uterus, he then passed a sound which entered 13 to 20 cm. This phenomenon he tried to explain on the hypothesis of a temporary paralysis or “ballooning” of the uterus, due to mechanical stimulation. In the absence of ocular demonstration, his views were generally contested, and his cases considered as probably perforations.

Kossmann, before curetting, passed a sound with extreme care; it slipped in to 14 cm. After a short time the canal measured 7 cm., whereupon he proceeded with the operation and felt the uterus to be firm and contracted. Kossmann believes the case to have been one of temporary paralysis of the uterine wall. It is more within the realm of experience, however, to consider such cases perforations.

Can the Fallopian tubes be probed in the normal subject?—Probably not; but the presence of tumors or other morbid conditions may render them permeable to a sound. Thorn experimented on specimens removed by operation and on the cadaver. He was unable to pass even a fine probe into the tube in cases of approximately normal uteri. He regards doubtfully the claims of those who report having passed probes on the living. Generally the cases were perforations.

The cases of Bischoff and Floeckinger are the only ones on record, according to Thorn, in which a sound was passed into a tube and demonstrated to be there by immediate operation. Both cases were myomatous uteri.

It is safe to assume then that when a sound passes to an abnormal depth in a uterus palpably of about normal size, that it is a case of perforation.

Factors Predisposing to Perforation.—These are conditions general or local, which have as a result the atrophy and softening of the uterus.

Döderlein, in his chapter on "Atrophia Uteri" in Veits' Handbuch der Gynäkologie, p. 390, agrees with Thorn in classifying atrophy into (a) Physiological, and (b) Pathological. The former includes lactation atrophy, senile and post-operative atrophy; but as these are mostly concentric with firm walls, the organ is rarely the seat of perforation.

The pathological variety of atrophy may be (a) puerperal, or (b) non-puerperal. It is in cases of puerperal atrophy that the accident of perforation has most frequently occurred. The prime factor in this form of atrophy is "infection."

Dittrich has demonstrated in cases of puerperal septic metritis the presence of hyaline degeneration, fatty degeneration and necrosis of muscle fiber.

Döderlein mentions cases of excentric atrophy in which the uterine canal is longer, but the wall very thin and friable. Such a uterus is usually retroflexed and very difficult of palpation. On passing a sound the instrument is liable to pass through the wall in spite of care.

Schulze-Villinghausen had two such cases occurring in weak, poorly nourished women, who had undergone numerous pregnancies and abortions. The uteri were large and soft. When the sound was passed, it simply went through the wall without any resistance being offered. The experiment was repeated and a vaginal hysterectomy done in both cases. Careful microscopic examination was made and can be read in detail in the original. The main points were the absence of fatty degeneration of muscle fiber; the separation of the muscle by an edematous infiltration; the great increase of blood-vessels with thickened walls, and the absence of inflammation.

Glaeser reports a somewhat similar case where the sound passed through of its own weight. After a vaginal hysterectomy the fundus was seen to be very thin and soft, or, as described by Glaeser, "wie gäusefett" (goose fat).

The studies of Ries on post-puerperal atrophy of the uterus have shown that the wall may be of extreme thinness, and the mucosa partially or entirely gone. In extreme cases the wall may

in places consist only of thrombosed vessels, the muscle fibers having disappeared through fatty necrosis. This type is the so-called "uterus membranaceus."

Kentman reports a case of myometritis edematosa, in which he discovered that he had perforated and performed a vaginal hysterectomy. Microscopically the muscle fibers were separated from each other by large interspaces, which were filled by a hyaline exudate. The vessel walls were thickened and the muscle fibers degenerated.

Bacon and Herzog report the findings of a case which terminated fatally soon after curettement. There had been a chronic infection lasting for months. The uterus was highly degenerated and showed areas of necrosis.

Dupuy speaks of cases where the uterus was so friable that instruments passed through with the utmost ease.

Among the local conditions which may be associated with uterine atrophy and softening are carcinoma, myoma, pelvic tuberculosis, pelvic abscess, etc.

Such general diseases as leukemia, diabetes, nephritis, Addison's disease, tuberculosis, pernicious anemia, may, along with the general wasting, be accompanied by uterine atrophy.

Gottschalk reports atrophy after acute infectious diseases, viz.: scarlet fever, typhoid fever and articular rheumatism.

Polak had a case in which the woman had a laparotomy some years before. There was a purulent discharge. Uterus perforated with Goodell dilators; immediate laparotomy. At the point of perforation the uterine wall was softened by suppuration due to the working through of some heavy silk. Opening sutured and recovery.

Is the Operator Blamable if He Perforates the Uterus?—This is an important question from a medico-legal standpoint, and one whose decision must be based on all the attending facts and circumstances. Mention has already been made of that class of soft uteri which offer absolutely no resistance to any instrument. The most expert operator will perforate, but will at once recognize the condition and act accordingly (Brothers, Alt, Liebman, Zinke, Queisner, Schulze-Vellinghausen, Kelly, von Herff, and others).

The novice, however, will remain in the dark as to the situation, and will persist in curetting and pulling down things with the placental forceps.

In the former event the operator should not be held liable, even in the case of a fatal outcome; the accident was clearly not due

to negligence or want of proper knowledge and skill. In the second case, however, there might be a question as to the liability, owing to a failure to recognize the perforation and the infliction of fatal visceral injuries.

In the *Berliner Klin. Wochenschrift*, 1886, July 5, p. 452, is related the experience of a young Berlin doctor who curetted for abortion and injected liquor ferri. The woman died; at autopsy four perforations were found. In spite of the expert testimony in his favor by Prof. Gusserow, the doctor was condemned to two months' imprisonment.

Von Herff, commenting on this case shortly after, warns against being too hasty in condemning a brother physician in whose hands such an accident has occurred. He cites a case of his own where there was hemorrhage after abortion, and a large, soft uterus. Using the utmost care, and thinking of perforation, the sound suddenly slipped through the wall of the uterus. All manipulations stopped. No sequelæ. In a few days he was able to curette.

Landau was called to testify in two cases where the uterus had been perforated; once for an incomplete abortion, and once for gonorrheal endometritis. The patients died, but Landau testified that the doctors were not criminally negligent, as they exercised reasonable care, and they were acquitted.

In the case of Bacon and Herzog the accused doctor was acquitted, it being shown that there were present such extensive degenerative changes in the uterus that the perforation was not due to negligence.

Cassatt (quoted by Pichevin) tells of a case where the operator perforated the uterus and introduced his curette so far that he actually lost it in the peritoneal cavity. It was eventually recovered with long forceps.

Mechanism of Perforation.—The perforation is accomplished either with a probe, sounds, curette, douche point, dilators, sponge tent, or other instrument.

The probe makes a clean, smooth puncture, depending somewhat on the character of the uterus. No intestinal injury has ever been reported following its use.

The curette naturally makes a larger hole, either from being pushed through or a portion of the wall being scraped away (Zinke). The bowel has been injured by the curette.

Sounds, such as Hegar's dilators, may perforate like a probe, only making a larger opening.

The douche point has been pushed through the wall; the main danger depends, however, on the injection of poisonous solutions into the peritoneal cavity (Queisner, Brothers, Haynes, Schenk, Lanelongue, Flandrin, Bonvalot, Raffray).

The dilators are a source of danger. They are pushed through the anterior or posterior wall at the angle, and when the blades are separated a large hole is torn. Considerable force must usually be required, because even in atrophied uteri the cervix and supravaginal portion retain much of their normal toughness. This accident is avoidable if the axis of the uterus is determined beforehand. If this maneuver with the dilators is now followed up by grasping in the dark with a placental forceps or a volsellum, there is no end to the amount of injury which might be inflicted to the bowel.

Result of Perforation.—This depends on whether or not there is

- (a) Infection carried into peritoneal cavity.
- (b) Fluids injected into peritoneal cavity, e.g., liquor ferri, lysol, sublimate, etc.
- (c) Visceral injury, mainly the bowel, sometimes omentum.

(a) *Infection.*—Where all antiseptic precautions had been taken and the uterine cavity was fairly clean, the uterus has been perforated many times by sound, curette, or dilator. This was done by expert operators and the injury recognized at once. The accident has been followed generally by no ill effects, as there was no bowel injury. Kelly, in his "Operative Gynecology," states that he has perforated the uterus with sound six times with no ill effects following.

Elder curetted for abortion; dilated with Hegars dilators. On introducing curette it slipped in and could be felt under the abdominal wall. Uterus packed; no irrigation; recovery. In another case the curette slipped in and bowel presented. This was replaced; uterus packed; no irrigation; recovery.

Queisner, after curettage, perforated with the douche point. The instrument was felt under the abdominal wall. No fluids run into peritoneal cavity; packed uterus; recovery.

Zinke, while removing a submucous fibroid, made a perforation one-quarter of an inch in diameter. Uterus packed; recovery.

Liebman perforated the uterus in two cases with sound, with no sequelæ.

Alt, in two cases, felt the sound pass in until it was felt under the navel. Both recovered.

Brothers says he has perforated the uterus four times in nineteen years. In two cases of abortion the curette slipped in to an unknown depth. Operation stopped; no irrigation; uterus packed. Slight pelvic inflammation, but eventually recovered. In a case of curettement for sterility, the same thing happened. Recovery and subsequent pregnancy. In the fourth case the curette perforated the posterior wall. Anterior vaginal incision made; fundus delivered; perforation sutured; salpingectomy. Recovery.

Theilhaber perforated two cases (an endometritis fungosa and an abortion) with no bad results.

Auvard had one perforation among two hundred and seventy curettements. The case recovered.

Chunn had two non-puerperal cases in which the sound slipped in and was felt at umbilicus. One of the cases barely recovered from resulting peritonitis.

These cases illustrate that where the uterus is simply perforated, and no further injury is inflicted, there follows little if any reaction. Usually some infection is carried in and results in a slight local peritonitis. There is some local pain and a slight elevation of temperature. The symptoms usually abate under ordinary treatment.

In those cases where there has been insufficient preparation of the patient, or septic endometritis existed, perforation becomes a grave accident. The patients either die of septic peritonitis, or there is set up a violent local inflammation with abscess formation, from which they may ultimately recover after a long siege.

Kelly saw a case in consultation. Curettement post-abortion; the posterior wall of the ante flexed uterus was perforated at angulation by Goodell dilators. There was already a peritonitis. Operation refused until some days later. Death from sepsis.

Neale reports a case of abortion with retained placenta. Some infection already present. A senior student in attempting to remove the remnants with his finger, tore a hole in the posterior wall of the uterus, which admitted three fingers. Patient went into collapse; drainage inserted into the cul-de-sac; patient finally recovered.

Mauclair saw two cases following abortion where the curette had perforated. One was followed by collapse and peritonitis;

abdominal hysterectomy; death. In another similar case the abdomen was opened, the uterus sutured; drainage; recovery.

Guérard relates a case where a woman supposedly pregnant had a sound passed to induce labor. The instrument was left in three days, during which time the woman was very sick and suffered extreme pain. Guérard removed the sound, excluded pregnancy, diagnosed ovarian cyst and opened abdomen. There was a tubercular peritonitis with ascites; a rent in the left side of the uterus was discovered and sutured. Patient recovered.

Van de Velde saw a case where during atmokausis the instrument perforated and death followed.

Kentmann, in a case which was afterwards shown to have been one of myometritis edematosa, did an abdominal hysterectomy for perforation and the patient got well.

Jackson reported two cases of death following curettement. They were probably perforations, although there was no autopsy.

(b) *Injection of Fluids*.—Other complications of perforation are due to the injection of irritating fluids into the peritoneal cavity. Among these are sublimate, lysol, liquor ferri chloridi, tinct. iodine, etc.

Brothers reports a case perforated by the curette followed by sublimate irrigation. Death soon after.

Haynes reports a case of perforation and use of bichloride followed by collapse, peritonitis, sublimate poisoning, but final recovery.

Schenck had a similar case where the douche point perforated and sublimate was run into the peritoneal cavity. Laparotomy—uterus sutured; sublimate poisoning; recovery.

I have already quoted the Berlin physician who injected liquor ferri, followed by death. Lanelongue had a perforation which was first noticed when the sublimate irrigation did not return. The patient developed mercurial poisoning and finally died of septic peritonitis.

Similar cases were published by Bonvalot (Thèse de Paris, 1892) and Raffray (Thèse de Paris, 1893.)

Flandrin reports two cases of perforation by the douche point and filling of the abdominal cavity with fluid.

(c) *Injury to Viscera*.—The viscera involved are usually bowel or omentum. Küstner reports two interesting cases.

CASE I.—Curettement two years before. Some accident said to have happened at the time, but patient did not know what, except that she had considerable hemorrhage and some pelvic

peritonitis. Irregular hemorrhages have continued since that operation. Vaginal hysterectomy by Küstner. A band of omentum found adherent to fundus and was ligated. Recovery. This band of omentum could be traced through uterine wall and a small mass was in the uterine cavity. The solution is clear. At the curettage the fundus had been perforated and omentum prolapsed. From the immediate effects the woman recovered, but she had a persistent, irregular flow.

CASE II.—A woman of 53 had been curetted some years before for leucorrhea and irregular bleeding. Küstner curetted again and in the scrapings fatty tissue was found. Küstner suspected that it was a case like the former and did a hysterectomy. The operation was difficult on account of adhesions. Examination showed a band of omentum passing through the wall of uterus, there also being a small mass in the cavity.

These cases are unique and illustrate the possibility of recovery after prolapse of omentum. A number of other cases are on record where after perforation the omentum prolapsed and the condition was recognized at once or afterwards.

Hoffman was called in consultation where a colleague had curetted for incomplete abortion. There was a perforation and the omentum was visible. Laparotomy; uterus large and flabby. Hole in antero-lateral aspect; free bleeding; sutured with silk after replacing omentum. Abdomen flushed and drained. Recovery. In the discussion (Phil. Obst. Soc., April 3, 1890) Dr. William Goodell related that he had a number of times perforated carcinomatous uteri with no bad results. Dr. Davis also related a case in which a curettement was done for retained placenta with death in two weeks. Autopsy showed a perforation.

Krusen reported a case of curettement for incomplete abortion. Omentum pulled down with forceps. Laparotomy a few hours later; omentum resected; sutured wound in fundus; recovery.

At a meeting of the Gynecological Society of Berlin, in 1894, the following cases were reported:

Veit: Digital removal of membranes and placenta after abortion; prolapse of intestine; vaginal hysterectomy; peritonitis; death.

Gusserow: Abortion; curettement; omentum pulled down; supravaginal hysterectomy; ligation of omentum; thrombosis of femoral artery and death from pulmonary embolism.

Orthmann: Abortion; curettement; intestine pulled down, per-

forated and separated from mesentery. Laparotomy, resection of gut; recovery.

Ohlshausen: Abortion; curettement; gut pulled down; resection of 30 cm. Death from peritonitis.

Martin: Abortion; curettement; 75 cm. of bowel pulled out and allowed to remain outside; collapse and death.

Perforations or bruising of the bowel are always of a very serious nature. Owing to this the cases found in the literature will be quoted in summary.

Boldt: Woman was curetted by a doctor for abortion. It was said he pulled down a "fatty substance" and tore a "white tube." The condition of patient was so good that Boldt doubted the story. Fifty hours later peritonitis developed; laparotomy; bowel torn and gangrenous, being separated from mesentery a distance of 14 cm. Death.

Gutbrod: Curettage for abortion; perforation of uterus and gut pulled down with forceps; reposition; packing; peritonitis developed, but ultimate recovery. Two months later intestinal obstruction from adhesions; laparotomy; recovery.

J. B. Harvie (quoted by Kelly) has personal knowledge of a case where a practitioner, after dilating, passed in a pair of forceps to catch the ovum and drew out and cut off six feet of bowel without realizing what he had done.

Alberti: Curettage for abortion; loop of gut pulled down. The doctor packed and sent patient to hospital. Laparotomy by Alberti. Loop of bowel seen entering rent 3 cm. long on right side of thin, friable uterus. Wound sutured; bowel uninjured. Recovery.

Fleischman: A doctor tried to remove with placental forceps a retained placenta after abortion, but pulled out intestine. Laparotomy by Billroth; nine inches of gut resected and a perforation in the colon sutured. Recovery.

Noble: A competent physician curetted for abortion and pulled down a loop of gut. Noble operated and resected three feet of gut which was separated from its mesentery, using a Murphy button. One-half pint free blood in abdominal cavity. Uterus sutured. Recovery.

Mann, in a paper on the subject, reports some interesting cases.

I. While operating for abortion a perforation was made with sharp curette; gut pulled down and torn across. Mann saw case one hour and a half later. Laparotomy; six inches of ileum separated from mesentery close to cecum. Head of colon injured.

Ileo-colostomy with Murphy button. Abdomen contained blood and feces. Sutured uterus and drained abdomen. Recovery.

II. A good surgeon dilated uterus to remove ovum in case of incomplete abortion. Pulled down intestine with placental forceps. Was not prepared for laparotomy, as this happened in country. Nevertheless abdomen opened, gut pulled back, uterus sutured. Death from peritonitis in two days.

III. A young doctor attending an abortion used dilators and placental forceps and pulled down gut. He kept on pulling until he had about six feet of it out, under the impression that it was the fetal intestine! (Pregnancy of three months.) He cut off the gut and sent for help. The patient died.

Mann himself once perforated the posterior wall of a sharply anteflexed uterus with Goodell's dilators. He was aware of what had happened; completed the curettement; omitted irrigation and packed. Recovery without untoward symptoms.

In a meeting of the Deutsche Gesellschaft für Gynäkologie of Würzburg in 1903, Koblanck reported a case in which during curettement for abortion a loop of intestine was pulled out with a volsellum forceps. Intestine was resected and recovery followed.

Van de Warker saw a case a considerable time after a curettement for abortion. There was a history of a membrane having been pulled out and roughly handled. At the operation the bowel was found torn across. Four inches excised and Murphy button introduced. Death.

Metro-Peritoneal Fistula.—Under this heading may be mentioned the case of Lawson Tait. It was a case of myoma uteri in which Tait perforated the anterior uterine wall while curetting on account of purulent discharge. Nothing was done and the woman recovered, but returned in nine months with recurrence of discharge. A vaginal hysterectomy was done, and at the base of a myomatous nodule the perforation of nine months previous was still patent. This Tait considers absolute proof of the existence of a permanent metro-peritoneal fistula.

Prevention of Perforation.—As already mentioned, there have been numbers of cases where perforation simply could not have been prevented on account of the friability of the uterine tissue. In general, however, the following principles should be observed:

1. Make an accurate pelvic diagnosis, as to size, position, mobility and consistency of the uterus. Determine the presence or absence of tumors upon or within the organ. Observe, if pos-

sible, its contractility. Determine the condition of the adnexæ and the possibility of pus tubes, ovarian tumors, pelvic abscesses and the like. In other words, get as clear a picture as possible of the pelvic organs.

2. *Dilators*.—In curetting post-abortion, bear in mind the possible extreme friability of the uterus. The cervix should be amply dilated to admit the finger. The direction of the cervical canal and uterine cavity should be accurately determined by means of a graduated sound. The question of angulation backwards or forwards should be known before introducing dilators, especially Goodell's. Disregarding this has been the cause of most perforations made with Goodell dilators. Avoid the ratchet and screw, but use the hands in dilating carefully. Dilate slowly so as not to split the cervix, meanwhile turning the instrument around in all points of the circle. Auvaré calls Sims' dilator with three blades the "dilatateur-perforateur," and claims that when dilators with two or three blades are no longer used perforations of the uterus will disappear. Kelly cites a case where there was unrecognized genital tuberculosis, in which the cervix was split into the abdominal cavity by the use of dilators. Omentum prolapsed. The wound was repaired, the appendages removed, and the patient recovered.

3. *Curettes and Placental Forceps*.—Some operators advise the removal of placental remains with the fingers if possible. Dull and sharp curettes each have their advocates. A sharp curette is best in the hands of the experienced. (Kelly.)

Be careful in the use of the placental forceps for pulling down something which may be felt in the uterine cavity. It may be omentum or gut. Never use a volsellum forceps for this purpose.

4. *Irrigation*.—Except in the presence of septic endometritis, the use of the irrigator is generally considered superfluous. (Kelly.)

If it is used a non-toxic solution, as boric acid, should be employed. Avoid strong solutions, such as sublimate. If there is the least suspicion of a perforation, *omit all irrigation*.

The injection of caustics, such as liq. ferri chloridi, tinct. iodine, chloride of zinc, is not without danger and should be used only where there are special indications. Application should be with a swab.

Treatment of Perforation.—1. When the accident occurs after antiseptic precautions and is done with a probe, and if there is no evidence of visceral prolapse or injury, then the treatment is

largely expectant. All irrigation should be omitted and the uterus packed.

Perforation with a sharp curette is more liable to injure the intestine, but where the operator is immediately aware of the accident and the instrument promptly withdrawn, the treatment may be same as above. Of course, there is always the chance of infecting the peritoneal cavity or of having injured the bowel. If the perforation is large, as shown by palpation or by the prolapse of omentum or gut, then it is not safe to tampon. The rent in the uterus should be sutured either by opening the abdomen or doing a colpotomy (Rosenfeld). Where there is an infective endometritis and the condition of patient will allow, then a vaginal hysterectomy had best be done (Kentmann, Guérard, Mauclore).

In all cases where there is evidence that the bowel has been pulled down or otherwise roughly handled by curette, placental or volsellum forceps, the best plan is to open the abdomen and carefully examine the whole intestinal tract. The bowel may be found torn across or may be separated from its mesentery. This will require suture or resection. There may be active bleeding from torn mesenteric vessels. The large and small intestine should be inspected, as there may be several injuries.

The uterus is sutured with interrupted catgut. This is usually easily accomplished, but there have been cases where the wall was so soft that the sutures tore through. In such a case do a hysterectomy if possible.

LITERATURE.

Alberti: Ein Fall von Perforation des Uterus beim Curettement mit Vorfall und Einklemmung des Darms. *Centralblatt f. Gyn.*, 1894, XVIII, p. 937.

Alt: *Berliner Klin. Woch.*, 1870, VII, p. 501.

Aran: *Leçons clinique sur les maladies de l'utérus*, Paris, 1858.

Auvard: Curage et perforation utérine. *Archiv. de Toc. et de Gyn.*, 1894, XXI, p. 581.

Beuttner: Ueber ein eigenthümliches, Verhalten des uterus beim Einführen von Instrumenten. *Centl. f. Gyn.*, 1897, p. 1271.

Bischoff: Ueber Eindringen der uterus sonde in eine Tube.

Korrespondenzbl. f. Schweizer.

Aerzte, 1872, No. 19.

Birchett: Uterine curettage; its indication and technic. *Med. Times*, New York, Aug., 1903, p. 228.

Bacon and Herzog: *AMER. J. OF OBST.*, Dec., 1899.

Boldt: *Monatschr. f. Geb. u. Gyn.*, 1899, p. 360.

Brothers: *AMER. JOUR. OBST.*, 1898, XXXVIII, p. 446; *Amer. Gynecol.*, April, 1903.

Bentauer: *Centl. f. Gyn.*, 1897, No. 42.

Chunn: *Maryland Med. Jour.*, 1884-5, XII, p. 51.

Courant: *Zur instrumentellen Perforation des Uterus. Centl. f. Gyn.*, 1897, page 1411.

Dupuy: *De la perforation des parois utérines par l'hysteromètre. Progrès méd.*, 1873, p. 109. *De la perforation des parois utérines par la curette. Progrès méd.*, 1894, p. 36.

Dumont: *Dangers et complications de curettage post partum. Arch. de Toccol.*, 1895, p. 161.

Duncan: *On a hitherto undescribed disease of the uterus, namely, an unnatural patency of the inner extremity of the Fallopian tube. Edin. Med. J.*, 1856, June.

Dolérís: *A propos du curage post abortum. Nouv. arch. d'Obst et de Gyn.*, 1892, VII, No. X.

Dittrich: *Das Verhalten des puerperalen Uterus unter pathologischen Verhältnissen. Zeitschr. f. Heilkunde*, Vol. X, p. 15.

Döderlein: *Veit's Handbuch der Gyn.*

Elder: *Two cases of perforation of the uterus during curettage. Med. Press and Circ., Lond.*, 1899, No. 1, p. 3.

Floekinger: *Centl. f. Gyn.*, 1898, No. 34.

Fleischman: *Protokoll der Geb. u. Gyn., Gesell. in Wien*, June 26, 1894.

Flandrin: *Centl. f. Gyn.*, 1895, No. 40.

Gottschalk: *Beitrag zur Lehre der Atrophia Uteri. Sam. Klin. Vorträge*, N. F., 1892, No. 49.

Glaeser: *Zur Uterus Perforation und Tubensondirung. Centl. f. Gyn.*, 1898, XXII, p. 139.

Guérard: *Centl. f. Gyn.*, 1898, XXVII, p. 708. *Centl. f. Gyn.*, 1901, No. 41.

Von Herff: *Der Frauenarzt*, 1886, I, p. 199.

Haynes: *Two cases in which the uterus was perforated by a curette. AMER. J. OBST.*, XXIII, p. 1193.

Hickman: *Notes upon a case of perforation of the uterus during curettage. Med. News*, 1895, p. 242.

Hildebrandt: *Ueber das Sondiren der Tuben. Monatschr. f. Geburtskunde u. Frauenkrankh.*, XXXI, p. 447.

Hoffman: *Am. Gyn. u. Ped.*, 1889-90, III, p. 412.

Hausen: *The curette in puerperal endometritis. Med. Record*, Vol. XXXV, No. 11.

Jackson: *Report of two cases of death following curettement of the uterus. Am. Gyn.*, 1887-8, I, p. 311.

Kossmann: *Muench. Med. Woch.*, March 20, 1900.

Kentmann: *Myometritis edmatosum und Sonderperforation. Monatschr. f. Geb. u. Gyn.*, 1898, Vol. VIII, p. 333.

Krecke: *Monatschr. f. Geb. u. Gyn.*, 1898, p. 419.

Kelly: *AMER. J. OBST.*, Jan., 1891, p. 42. *Operative Gynecology*, Vol. I, p. 479.

Küstner: *Einheilen von Netzpartien in die Uterushöhle nach Perforation mit der Curette, mit Bemerkungen über Vermeidung und Therapie*

der cürettenperforation überhaupt. *Monatschr. f. Geb. u. Gyn.*, Bd. VIII, p. 246.

Krusen: *Amer. Med.*, Dec. 14, 1901, p. 947. *Penna. Med. J.*, 1902, No. 8.

Lanelongue: Deux cas de perforation uterine pendant l'opération de curettage. *Arch. de Tocol. et de Gyn.*, Paris, 1892, Vol. XIX, p. 395 & 475.

Laudau: *Centl. f. Gyn.*, 1901, No. 36.

Liebman: Ueber die Perforation der Uteruswände mittelst Sonde, Berlin, 1879.

Mann: Perforation of the uterus after abortion with prolapse of intestine. *AMER. J. OBST.*, 1895, p. 603.

Mauclaire: *Centl. f. Gyn.*, 1902, No. 50. *Ann. de Gyn. et d'Obst.*, 1903, Jan., March.

Noble: *Amer. Gyn. and Obst. Jour.*, Jan., 1898.

Neale: *Maryland Med. Jour.*, 1884-5, XI, p. 366.

Osterloh: *Muench. Med. Woch.*, 1903, No. 21, p. 903.

Pichevin: Des accidents causes par la curage uterine. *Ann. de Gyn.*, 1895, May, p. 397.

Polak: *Med. News*, 1899, May 6, p. 555.

Queisner: Zur instrumentellen Perforation des Uterus. *Centl. f. Gyn.*, 1898, XXII, p. 712.

Ries: Ueber die Atrophie des Uterus noch puerperalen Erkrankungen. *Zeitschr. f. Geb. u. Gyn.*, Vol. XXVII, p. 1. Klinische und anatomische Studien über Zurückbildung des puerperalen uterus. *Zeitschr. f. Geb. u. Gyn.*, Vol. XXIV, I, p. 33.

Rabl—Ruckhard and Lehmus. *Beitr. d. Berl. Gesell. f. Geb. u. Gyn.*, 1872-3, II, 12.

Richardière: *Ann. d'hygiene*, Paris, 1887, XVIII, p. 427.

Rosenfeld: *Centl. f. Gyn.*, 1898, No. 11, p. 278.

Rebreyand: *Révue de Gyn. et de chir. abd.*, 1901, No. 5, p. 203.

Schenck: *Muench. Med. Woch.*, 1901, No. 22.

Schwarz: *Centl. f. Gyn.*, 1899, No. 30.

Schwab: Cas de perforation, très probablement traumatique de l'uterus. *Bull. et Mém. de Soc. Obst. et Gyn.*, Paris, 1895, p. 495

Tait: Perforation of the uterus by sound or curette. *Lond. Lancet*, 1895, Aug. 10, p. 326.

Thom: Beitrag zur Lehre von der Atrophia uteri *Zeitschr. f. Geb. u. Gyn.*, 1889, Bd. XVI, p. 57. Tubensondirung und Uterus Perforation. *Centl. f. Gyn.*, 1904, p. 1072.

Theilhaber: *Monatschr. f. Geb. u. Gyn.*, 1898, Vol. VIII, p. 419.

Van de Velde: *Centl. f. Gyn.*, 1898, No. 52, p. 1409.

Van de Warker: The dangerous operation of uterine curettement. *N. Y. Med. J.*, Oct. 10, 1903.

Wertheim: *Monatsch. f. Geb. u. Gyn.*, 1898, Vol. VIII, p. 419.

Zincke: Perforation of uterus by the curette. *AM. JOUR. OBST.*, Vol. XXIX, p. 518.

A NEW SELF-RETAINING CATHETER AND VESICAL IRRIGATOR.

BY

HORACE G. WETHERILL, M.D.,

Professor of Gynecology and Abdominal Surgery, Denver and Gross College of Medicine; Surgeon-in-Charge, the Woman's Hospital, etc.

(With one illustration.)

No entirely safe and satisfactory self-retaining catheter has ever been devised and the dangers and discomforts of those heretofore used are such that many surgeons have abandoned them altogether and depend upon frequent catheterization with the ordinary glass or rubber catheter instead.

For women, the mushroom catheter has been the most satisfactory retention catheter to be had, but its liability to obstruction and imperfect drainage is so great, and the discomfort for the patient so hard to bear that the results of its use are often quite disappointing, if not disastrous. Then, too, they are not procurable outside of the large cities and if the surgeon attempts to keep a supply on hand they soon become hard and dry and unfit for use.

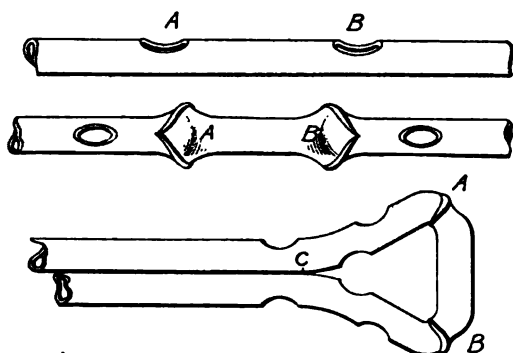
For the cure of certain intractable forms of cystitis and of vesico-vaginal fistula a perfect working retention catheter is an absolute necessity; and if we are to avoid retrograde infections of the ureters and kidneys and get union of sutured bladder walls, perfect drainage must be maintained. If to perfect drainage we can add a device for frequent irrigations of the bladder with a boric or other antiseptic or soothing solution, the prospect of success will be better.

This I have been able to do by adapting my intra-uterine flushing and drainage tube to vesical use, making it of smaller sized white rubber tubing which resists the compression of the urethra and vesical sphincter.

It has the advantages of being always available as the surgeon may make one for himself in a very few minutes. It drains perfectly and may be irrigated by the nurse at very short intervals, if necessary, without changing the position of the patient in bed, the frequent irrigations preventing obstruction with blood, mucous or urine incrustations. Continuous irrigations may be maintained through it if for any reason they are deemed necessary.

This self-retaining catheter and vesical irrigator is made as is shown in the accompanying cut and as described in my paper entitled "Intrauterine Flushing and Drainage for Infection," etc., published in *American Medicine*, January 30, 1904.

Its introduction into the female bladder is easily accomplished by pushing the center of the loop up with a flat probe or applicator so that the legs of the tube are parallel. After being well anointed they slip through the urethra easily and upon the withdrawal of the applicator snap back into the original triangular shape, which prevents their expulsion from the bladder. Then one leg may be connected with a bottle or other receptacle over the side of the bed and the other with a fountain syringe or



THE TUBE.

1. Cut two holes in a long piece of drainage tubing as indicated at A and B. 2. Draw one end of the tube through A and out at B, thus inverting that portion of the tube between the holes as seen in 2. 3. Bend the legs of the tube down so that the holes A and B will be left open for drainage. If bent in one direction they are open, if in the other closed. Tack with a blind stitch at C. Use soap or pulverized soapstone to make the tubes slip.

glass irrigating reservoir; the stream to be continuous (fast or slow), or intermittent as desired.

By leaving the blind stitch out and making the legs of the tubes of exactly equal length, the probe may be put into the angle A and the legs of the tubes held closely along the sides, thus reducing the bulk of the tubes for the purpose of introduction, the shoulder or retention bar being reproduced by making the ends of the tubes even and holding them so with a stitch or safety pin. I have had no difficulty in introducing the tubes as originally made, however, and when so made (with the blind

stitch) they are more certainly and easily retained. Their removal is equally easy as, upon withdrawal, the tubes fall into parallel lines in their passage through the urethra.

They may be made of a small sized (No. 10) soft rubber catheter, but are better and more apt to remain patulous if made of the white rubber stock.

This irrigating retention catheter was evolved to meet the necessities of a particularly difficult and trying case of vesico-vaginal fistula of twelve years' standing, and which had resisted eleven attempts at closure at the hands of some of the best surgeons of Denver and Chicago, and to it rather than to any unusual operative technique is due the excellent result attained.

During the performance of a vaginal hysterectomy by an inexperienced operator an opening was made into the bladder through the anterior vaginal wall high up. The eleven attempts at closure during the twelve years of its existence served merely to enlarge the opening, cut away the vaginal and vesical mucous membrane and leave a dense mass of cicatricial tissue through which it was almost impossible to pass a knife or needle.

When I first saw the patient the opening was nearly as large as a silver dollar and the bladder and vagina were completely encrusted with phosphatic urine salts; the mucous membrane was thickened and granular and bled freely upon the slightest touch. The odor was ammoniacal and putrid and the surfaces so hyperesthetic as to be intolerant of the gentlest touch. Even under complete surgical anesthesia this sensibility to touch was maintained after all reflexes were abolished.

At first I declined to attempt to close the fistula as the conditions were so bad and there was so little tissue left to work with, but particularly as the scar tissue and deeply infected mucous membrane of which the flaps must of necessity be made, would be most unfavorable for union. Then, too, I could scarcely hope to succeed where several of our best operators had failed. As a palliative measure I advised the spooning off of the incrustations, as the pain and tenesmus they produced were intolerable.

This was done, after which the vagina and bladder were irrigated twice a day with mild antiseptic solutions, and urotropin was freely administered by mouth. The relief from pain and disappearance of the putrid ammoniacal odor were immediate and marked improvement in the local conditions quickly followed.

Then it occurred to me that perhaps a successful closure of

the fistula might be made if perfect drainage of the bladder could be secured along with a continuance of the frequent irrigations which had already accomplished so much for her in the way of improvement and, concluding that this could be done with my double tubes, the attempt was made.

The usual crater-like denudation of the vaginal mucous membrane was made, the bladder was then dissected off by a flap-splitting method, the posterior wall and fundus being freed and drawn down and sutured to the lower segment with fine chromic catgut, the line of sutures running transversely.

Over this the crater-like vaginal wound was sutured with silver wire in a vertical direction, the two lines of sutures crossing at a right angle. The double tubes which were to act as self-retaining catheter and vesical irrigator were then introduced into the bladder through the urethra. Injection of the bladder now demonstrated that the lines of sutures were water tight but that the whittled and contracted reservoir had a capacity of less than one fluid ounce.

The patient was put to bed and one leg of the tube connected with a bottle hung from the bed rail. Through the other, from four to six ounces of a hot saturated solution of boric acid was allowed to flow from a nasal douche bottle, as first every half hour and gradually at lengthening intervals. This always relieved and allayed the pain and vesical tenesmus and desire to expel the catheter, and it is to this feature of the management of the case I attribute our success, as the patient afterward told me she had "suffered continuously from bearing down after her other operations and had frequently expelled the catheter and forced urine through the stitches."

My assistant, Dr. Powell, conducted the after care of the case most admirably and upon my return after an absence of three weeks I found the fistula perfectly healed excepting a small valvular opening at the crossing of the vertical and horizontal suture lines.

This little opening was readily closed by freshening its edges and drawing them together with a few shotted silver wire sutures, the irrigating catheter being again introduced for ten days during the healing process.

At the end of this time the vesico-vaginal septum was perfect and the patient could retain her urine for half an hour.

Twelve years of disuse of the bladder had, however, so altered the conditions that of necessity a long time must elapse before

sufficient expansion and tolerance can make its capacity what it should be, and much redevelopment and education of the unused sphincter will be required for the retention of the urine.

This process is going on quite satisfactorily, however, as the patient now retains her urine for about two hours and passes from two to three ounces at a time. The scar is soft and firm and the septum perfect, though the vagina is very shallow and the bladder small from the removal of so much tissue at the numerous operations.

In this case the self-retaining catheter worked like a charm and the facility it offered for frequent irrigations of the bladder without disturbing the position of the patient in bed, indeed, without thoroughly awakening her from a sound sleep at times, made success possible.

In those intractable cases of chronic cystitis in women, where an old infection has made the formation of a temporary vesicovaginal fistula necessary for drainage, I believe this self-retaining catheter and vesical irrigator will accomplish the same good results without the creation of the fistula.

The use of urotropin is a most valuable adjunct in the treatment of all of these cases.

I have had no opportunity to make a trial of this device in the male urethra; but if there be no tight stricture or great enlargement of the prostate gland I believe it may be so used. It can easily be adapted to all cases in which a peritoneal cystotomy has been done and in the various prostatic operations and also in external urethrotomy.

Since writing the above I have operated upon another vesicovaginal fistula, also the result of a vaginal hysterectomy. Though two unsuccessful attempts at its closure had been made I had the good fortune to secure perfect union and a tight septum at my first attempt.

Again the self-retaining catheter and irrigating device was used with great comfort to the patient and entire satisfaction to the operator. In this case also I have felt that the good result attained was due more to this simple device than to any unusual skill in performing the operation.

SUTURE AND LIGATURE MATERIAL.¹

BY

CHARLES ELLSWORTH CONGDON, M.D.,

Buffalo, N. Y.

IN attempting to discuss this subject we at once encounter an obstacle in the paucity of our nomenclature. Both suturing and ligation should be included under a common general term, since both involve the primary conception of an artificial retentive device, thread-like in form, and destined to remain in place for a considerable period, until the vital process of cellular activity has secured at least the beginning of permanent union.

Suturing implies the retention of tissues in appreciable sheets or masses, with the object of securing union by adhesion, or at least of diminishing, so far as practicable, the space to be bridged in by granulation tissue. In suturing there is also anticipation of the necrosis of very minute masses of tissue. Ligation, on the other hand, implies the occlusion of a single tubular structure, such as a vessel or duct, or of a mass of similar minute structures included in a pedicle. Excepting comparatively rare instances in which a vessel or duct, especially the spermatic duct, is occluded without severance, ligation differs from suturing in implying the presence of an appreciable mass of tissue destined to undergo necrosis, preferably without sepsis, but with absorption of the tissues distal to the ligature. Generally speaking, ligation is also performed in deeply-seated structures, whereas suturing implies the presence of a free surface, either upon the exterior of the body or internally, as in the case of the alimentary canal, a duct, vessel, and similar structures.

The process of union, assisted by either ligation or suturing, is essentially a function of mesoblastic, leucocytic cellular activity, epithelium and endothelium probably never being restored to an ideal state of integrity, although the gap bridged in by connective tissue may be minute, and there may even be a superficial covering of the connective tissue bridge by epithelium. A visible scar of exterior surfaces is inevitable, but in the case of the alimentary canal and of tubes lined with endothelium no visible defect may remain.

¹Read at the Seventeenth Annual Meeting of the American Association of Obstetricians and Gynecologists at St. Louis, Mo., Sept. 13-16, 1904.

The typic operation of suturing involves a succession of penetrating stitches, while the typic ligature surrounds a column of tissue with a single loop secured by a knot. Yet a small wound requiring only a single suture conforms closely to the concept of ligation, while, on the other hand, the Tate ligature, or *a fortiori*, the atypic ligature of a broad pedicle, by a series of retentive loops, trespasses on the definition of suture. Thus, it is impossible to distinguish sharply between suturing and ligation, and no attempt will be made to do so in the further discussion of this subject.

Broadly speaking, any thread-like substance may be used for either suturing or ligation. It would require too much space to discuss in detail the limitations and preferences which exclude the vast majority of fibers from use for either purpose, or the well-known, though not always unanimously accepted, reasons for choosing certain materials for use in one operation, and certain others when circumstances are different. Especially as the choice depends largely upon individual physical characteristics of various fibers, it would be a waste of time to attempt to lay down general laws for selection, in the present unsettled state of surgical opinion. We may, however, be influenced by the fact that usually, though by no means invariably, the suture is under observation and destined to voluntary removal when its purpose has been fulfilled, while the ideal ligature is one that may be left deep in the body and its subsequent fate intrusted to vital processes.

Undoubtedly, the first use of a thread-like device to secure occlusion was that of a hair, sinew, or vegetable fiber to ligate the umbilical cord.

Such practice has been observed more or less generally in various primitive people, and must long antedate the dawn of history. The earliest authenticated use of the umbilical ligature is by Susrutus, B. C. 1500. Owing to the natural safeguards against hemorrhage and infection, there has been comparatively little incentive to improvement in this regard, until the introduction of aseptic measures into obstetrics, within our own recollection. Indeed, it is altogether probable that beyond the availability of different forms of string, the majority of modern ligations of the umbilical cord are not a step in advance of the practice of many prehistoric savages.

Barring the tourniquet, which is merely a temporary ligature of an entire limb, which may even have antedated the ligature of the umbilical cord, the next step, historically speaking, is the application of the ligature to severed vessels, dating at least from the

time of Hippocrates, B. C. 460, and also mentioned by Celsus, B. C. 25. It is somewhat doubtful whether either of these writers, who were essentially physicians and not surgeons, actually practiced ligation, but if not, their references to it are even more significant, as indicating that it was an accepted item of contemporary practice. Owing to ignorance of the principles of antiseptis, as well as to purely mechanical imperfections, the danger of secondary hemorrhage has militated against the popularity of the ligature, and throughout the dark and the middle ages it was almost entirely supplanted by hemostasis by external pressure and styptics, of which favorite means were the cautery and immersion in boiling oil.

The reintroduction of the vascular ligature is due to Ambroise Paré (1517-1590), who was its untiring champion. Yet opposition both to the ligature and to the suture has persisted to the present day, as is attested not only in medical literature directly devoted to polemic discussion, but by numerous records of invention of clamps, angiotribes, cauteries, lacing devices, serre fines, and various other substitutes for thread-like retentive devices.

To one of modern anatomic and physiologic training, it is almost incomprehensible that Paré and his predecessors, men of ample intelligence and wide experience, could have used the vascular ligature to prevent hemorrhage without having discovered that arteries were not, as the name implies, air tubes, and without having conceived of the circulation of the blood. It is almost beyond belief that they did not connect in some vague way the beating of the heart and the jetting of arterial blood, and distinguish between arterial and venous hemorrhage. Yet the actual discovery of the circulation of the blood dates only from the researches of Harvey in 1628.

The next step in the extension of the ligature, beyond the function of direct hemostasis, was its application to the treatment of aneurysms, in which we see illustrated both the therapeutic effort directed toward the aneurysm and remote prophylaxis of hemorrhage. Here, too, we find the first example of ligation without severance. The history of the ligature treatment of aneurysm is scarcely germane to our present subject, as the choice of material and its preparation conforms to the general principles for ligation for other purposes.

The use of the suture, excepting for clean external wounds of short length, or of longer ones in very vascular and rapidly heal-

ing parts, such as the scalp, was prevented by the almost inevitable occurrence of local sepsis, whose occasional occurrence to-day is a recognized indication for the removal of sutures, except as they may be retained merely to abridge the chasm between granulating surfaces. Thus, until recently, suturing has had mainly a cosmetic function, its application on a large scale to deep and penetrating wounds being subsequent to aseptic surgical development.

So, too, until this development has been achieved, the internal suture of the alimentary canal, of vessels, ducts and the like, accidentally wounded or torn, and not situated comparatively superficially, as in amputation stumps, was impossible. Ephraim McDowell, as early as 1809, successfully removed an ovarian cyst and treated the pedicle with a ligature, said in the first instance to have been cut from his buckskin mitten. By some fortuitous combination of circumstances, he anticipated the logical results of asepsis. But, while all credit should be given to this pioneer American abdominal surgeon, the fact should not be overlooked that the routine and successful use of the deep ligature, as well as of the deep suture, and especially the extension of the ligature beyond the function of tying good-sized vessels individually or in associated groups of arteries and veins, required the discovery of anesthesia and antisepsis as prerequisites.

At present, the primary application of the ligature to the umbilical cord is regarded as a matter of very minor, almost of domestic surgery, while its next important application to vessels of good size is considered rather as an incidental feature of most operations. Matters of greater consequence and subject to freer surgical discussion, with marked differences of individual opinion, are the ligation of pedicles, as of the spleen, kidney, ovary, or tumor; of stumps left after the resection of the vermiform appendix or diverticula; of broad expanses of tissue, as of solid organs from which portions have been excised, or of the omentum; while the internal suture is required in the most varied ways, often involving the principles of the ligature, in the most intricate operations of the modern gynecologist and abdominal surgeon.

The problem is no longer the comparatively simple one of direct hemostasis, but involves painstaking detail to prevent immediate damage from leakage of contents or secretions, to prevent the establishment of fistulæ and development of retention cysts; and when hemostasis is the prime object, it is seldom a problem of extreme difficulty, except when one has to deal with a solid mass of tissue, such as the liver, which is freely supplied with vessels too

minute for individual ligation. In practically all cases the abdominal surgeon has to anticipate the necrosis of an appreciable portion of tissue distal to the ligature, infection of which will not only prevent its ready absorption in accordance with physiologic principles, but will result disastrously, either in comparatively speedy death from sepsis or in a delayed and impeded recovery, often with a complete nullification of the primary object of operation.

The ideal treatment of an intraabdominal stump or pedicle demands that it shall be left in its original position and permanently and immediately closed inside the abdominal cavity, trusting absolutely to the efficiency and future harmlessness of the ligature. In certain cases this ideal treatment is obviously impossible and the stump must either be inclosed in the abdominal wound or allowed to extrude from it, or at least the abdominal wound must be left open provisionally, for the inspection and further care of the stump and ligature. Yet, in general, the internal ligature and, only to a less degree, the internal suture, present problems as far as possible removed from the original and simple requisites of the umbilical ligature, and far more difficult of solution than those involved in the purely hemostatic ligature of vessels in an amputated limb or exposed wound and in the ordinary external suture, in which case the foreign material is subject to inspection and may be readily removed.

Tersely stated, the requirements for ligature and suture material in the more difficult and more deeply seated fields of modern abdominal surgery, are:

1. Absolute sterility, not only at the time of use, but during the vicissitudes to which it is subsequently subject.
2. Adaptability to torsion and flexion, and to the formation of a secure knot.
3. Strength, not only at the time of its use, but subsequently.
4. Resistance to absorption during the process of union by cellular activity.
5. Ultimate complete absorbability, with the possible exception to be noted later.

Excepting the general principles of asepsis, which are included in the present problem, there is no other topic in surgery about which there is so unanimous agreement as to principle, and so wide a discrepancy of individual opinion with regard to details, than this one of suture and ligature material. This paradox is due to the fact that no readily available thread fulfils the requisites

mentioned, and that in any particular case, or in the experience of any particular surgeon, greater or less importance is laid upon the relative perfection and imperfection of any one material.

We may discuss first the comparatively rare cases in which a permanent ligature or suture is required. In the past, an exaggerated idea has been held of the length of time required for the healing of wounds by the formation of cicatricial tissue. Generally speaking, the requisite degree of restoration of integrity is reached within ten days or two weeks at the longest. In bone surgery, metallic sutures or pins of some dense material may be required for several weeks, but Sir William Macewen, in the address on surgery before the British Medical Association, 1904, incidentally alludes to the fact that such foreign bodies do not remain firmly fixed, even in bone, for a longer time than a few weeks. After this time the bone softens about them and their usefulness as retentives has passed, while nature is obviously making an effort at the extrusion of a foreign body. Gynecologists and abdominal surgeons are interested in this use of permanent sutures only in complicated cases, and in the treatment of the symphysis after symphysiotomy.

Granted that a permanent ligature or suture is indicated for operations upon the soft parts, it must be smooth, unirritating, aseptic, and susceptible to encapsulation. These requirements are met, as well as by any other material, by silver wire, though gold or any other ductile and non-corrodable metal may be employed. The writer questions, however, whether any metallic suture actually fulfils the theoretic indication of supplying a permanent support, or, rather, whether a permanent foreign support of this nature is ever really indicated. Almost the only instance in which the need and desirability of such support is now claimed is in the treatment of hernial rings. Sir William Macewen (*loc. cit.*) expresses himself strongly in this regard, and cites five cases in which gold wire had been used in the treatment of hernia. All of these cases apparently demonstrated the futility of the effort to erect a permanent metallic barrier. In one the physiologic tendency to extrude a foreign body was manifest, and in two others not only was the loop of wire loose in the aponeurosis, but the bowel had actually become entangled in it, and in one of these had already become perforated by impinging against the wire. Practically, the only indication for the use of silver or other metallic wire suture in abdominal surgery of the soft parts, is to afford strong union of the abdominal wall after section in insane

patients or those otherwise not amenable to ordinary restraints of motion and straining. No indication is afforded in abdominal surgery for the use of silver wire as a ligature in the strict sense.

Generally speaking, any animal or vegetable material imbedded in the living tissues will be ultimately absorbed by a species of cellular digestion, of whose exact nature we are in ignorance, unless (1) it is completely impregnated with some mineral matter; or unless (2) it is so large and unirritating as to become encapsulated permanently; or unless (3) it is or becomes infected with microorganisms, when (A) it will either be extruded by the well-known process of suppuration and sinus or fistula formation, or (B) the resulting sepsis will become general and will result fatally.

Silk has always been a favorite suture material and has had many advocates, even as a material for buried ligatures. On account of its flexibility, strength, smoothness, and unirritating qualities it fulfils admirably the second, third and fourth requisites of an ideal material. While not an absolute exception to the principle just enunciated, it is practically non-absorbable, and numerous instances are recorded of its recognition at necropsies or subsequent operation long after its implantation, as well as of its discharge through fistulæ and sinuses. While its sterility is readily secured by boiling five minutes, its strength is impaired even by a second boiling, and, owing to its free absorption of water, it becomes a favorable medium for bacterial cultures, so that stitch-hole abscesses are comparatively common after its use. For intestinal suture there is no material so reliable as silk, used in the form of small sterile filaments, not in the coarse twists or braids often sold for this purpose and for surgical use generally. A silk which will stand repeated boiling without marked impairment of strength has almost certainly been adulterated with vegetable fiber.

Vegetable fibers are occasionally employed for ligatures and sutures mainly in emergent practice, in the absence of more suitable material. As they present no marked advantages over animal material and have many disadvantages of their own, they will not be discussed in detail.

Silkworm gut is made by drawing out into a thread the fluid silk in the body of the worm about to spin its cocoon. This material is obtained in bundles of a hundred threads, each twelve to fifteen inches long. These are smooth, strong and springy, yet capable of being tied securely. Occasionally they break, especially if too much tension is placed on the knot while being tied. Like

silk, silkworm gut may be sterilized by boiling, and it is practically non-absorbable. On account of its polished surface it is unirritating, unless the sharp ends are buried, and the threads are readily withdrawn. It is an excellent material for tension sutures.

Kangaroo tendon has been exploited as a material for deep sutures and ligatures, especially in cases of hernia, in which a degree of permanence is desired. Numerous reports, however, show that it is often absorbed within a few days. It may be sterilized by boiling, but repeated boiling lessens its strength. Dorsett, at the meeting in 1902 of the American Association of Obstetricians and Gynecologists reported two cases in which tetanus was traced to infection of this material. Tetanus, though a rare complication of supposedly clean wounds, demands our serious attention, not only on account of the high mortality, but of the direct responsibility which attaches to the surgeon when it develops without accidental traumatism, but in a wound inflicted as a therapeutic measure. The United States Public Health and Marine Hospital Service published a bulletin in 1902 in which six cases of tetanus due to gelatin were studied. It was shown that brief boiling does not insure against infection with tetanus, but that it must be continued for at least half an hour or must be repeated.

The writer would emphasize the fact that thorough asepsis can be obtained in practice only by extemporaneous disinfection of all materials used. It is needless to state that surgeons are practically unanimous in the view that the most satisfactory method of obtaining sterility is by boiling prior to the employment of instruments and other accessories. While, theoretically, suture and ligature material may be sterilized long before use and maintained in a sterile state by immersion in antiseptics or by hermetic sealing, there are numerous practical obstacles to the perfection of an antiseptic technique dependent upon such materials. When prepared on a commercial scale, by comparatively unskilled and uninterested employees, errors in technique are inevitable. Even when prepared under the immediate supervision of the responsible surgeon, the opening of packages, the drawing of a thread through an opening in a receptacle, the almost inevitable contamination of such receptacles from exposure to the air of the clinic, or the waste of material and delay if the attempt is made to prepare material in just the quantity liable to be needed, all favor the plan of extemporaneous sterilization by boiling. Even elaborate processes of sterilization of catgut by immersion in sub-

limited ether, juniper oil, silver salts, dry heat of high temperature in paper packages, etc., have, in the writer's experience, not proved entirely satisfactory, as infection has occasionally developed. These methods undoubtedly produce complete primary sterility, but reinfection is likely to occur through some unforeseen error of technique, perhaps on the part of an assistant, in a small minority of cases it is true, yet in too large a number to satisfy surgical ideals. In experiments in which the writer participated at the University of Berlin, 1894-1895, it was found that reliable sterilization of previously infected suture and ligature material by sublimate required twenty days, whereas, even tetanus spores were killed by exposure in the steam sterilizer for three minutes in the majority of instances, and were positively killed by three similar treatments on alternate days.

For some unknown reason, possibly a predilection to tetanus on the part of the kangaroo, possibly by adulteration with sinew from the horse, which is notoriously liable to tetanus, kangaroo tendon has proved a notable, though still rare source of tetanus, while, so far as the writer can learn, such infection has never been traced to catgut, although it has been used a thousand-fold more often. Commercial catgut is prepared from the intestine of sheep, which are very little subject to specific infections, such as tetanus, tuberculosis, and the like. Catgut has long been a favorite suture and ligature material; it is cheap, easily obtainable and easily handled, and is not liable to contamination, except with the saprophytes and pyogenic bacteria. In considering it in the light of the five requisites for an ideal suture and ligature material, we find that it fulfils the second, third and fifth. It is, however, notoriously deficient in its resistance to absorption, so that even heavy catgut cannot be relied upon for deep sutures and ligatures without special preparation by impregnation methods; in its original state it cannot be boiled in water without being destroyed; even as ordinarily prepared to resist absorption, it cannot be subjected to extemporaneous disinfection by boiling without loss of strength and inhibition of water, so that it is with difficulty threaded into needles and handled. Chromicized and cumol catgut resist absorption, but cannot be boiled sufficiently for thorough sterilization without loss of consistency.

By the method which the writer has employed for a number of years, catgut is modified so that it may be boiled like silk, and is, therefore, rendered thoroughly dependable for deep sutures and ligatures without destroying its ultimate absorbability or inter-

fering with its natural adaptability for handling and tying. We may even gauge quite accurately the length of time for its absorption. This method was originally brought out by Hofmeister, and was introduced to the American profession by Nicholas Senn in 1896. It is so simple and reliable that anyone may prepare his own material, and so accurate that it may be adapted for an artificial support for a few days or a number of weeks, as required by the nature of the case, thus rivaling the claims that have been made for kangaroo tendon, and which, unfortunately, have not been altogether substantiated in the general experience of reporters.

The method of preparing catgut, as modified by the writer as the result of experimentation since 1896, is as follows: take dry catgut, which comes in strands ten feet long, carefully test for imperfections by passing through the hands and noting its strength and inspecting for weak points and irregularities, fasten one end to the end of a glass cylinder, for instance, an ordinary drainage tube which has a hole drilled near each end, wind snugly in a single layer, and fasten the other end similarly. Completely submerge in a 3-per-cent. formalin solution. The writer finds that only the sizes from No. 1 to No. 4 are necessary.

No. 4 is allowed to remain in the solution for 4 hours.

No. 3 is allowed to remain in the solution for 3 hours, 5 minutes.

No. 2 is allowed to remain in the solution for 2 hours, 15 minutes.

No. 1 is allowed to remain in the solution for 1 hour, 35 minutes.

The catgut is removed and immediately placed in running water for the same length of time that it has been in the formalin solution. It is then dried in the open air at ordinary temperature, labeled and put away for future use.

This process may be termed mercerizing, since the catgut thus prepared may be handled precisely like silk; it does not deteriorate by repeated boiling more than silk, it is pliable and easily and securely tied, and it differs from silk only in its ultimate absorbability. The reliability of boiling this material to secure sterility has been repeatedly tested by the writer clinically, by the absence of local septic complications, and has also been verified by bacteriologic tests by Dr. William G. Bissell, of the Buffalo Department of Health.

The approximate time for which material thus prepared may be depended upon to furnish support to the tissues is as follows:

No. 4, 7 days. No. 3, 5 days. No. 2, 3 days. No. 1, 36 hours.

While it has been the general object to secure a material which shall be absorbed as rapidly as possible, with regard to the nature of the case, there are conditions, such as hernia, in which it seems desirable to support and maintain the tissues in apposition for a long time. To secure this end, a 5 per cent. solution of formalin is employed instead of a 3 per cent. solution, and the gut is left in the solution for as long a time as is compatible with the preservation of a fair degree of flexibility. This time has been found to be approximately double that stated for the respective sizes of gut when treated by the 3 per cent. solution. If allowed to remain too long in formalin, the gut becomes brittle. In any case, the washing in running water is carried on for the same length of time used in the immersion in formalin solution. Number 4 gut, treated according to the latter specifications, will remain in the tissues for 4 to 6 weeks, but is subsequently completely absorbed. In large hernias of long standing, in which there is likely to be considerable traction on the fascia, No. 4 catgut will meet all expectations, not disappointing so frequently, as has commercial kangaroo tendon, by too rapid absorption or infection. If there is not too great separation of the fascia, No. 2 or No. 3 gut prepared by the second process, or No. 4 prepared by the first process, will be found amply resistant.

No. 1 gut prepared by the second process meets many indications. It may be used in surgery of the biliary or urinary bladder or their tracts with perfect safety, when a non-absorbable substance would probably become the seat of calcareous deposits.

In obstetric practice, in the performance of immediate repair of the perineum No. 3 or No. 4 gut, by the first process, is to be selected. In cases of long standing, where the muscles and fascia are widely retracted, the vagina is separated from the rectum, the levator muscles are exposed with their fascia and are united directly with No. 4 gut prepared by the second process.

A further advantage of the method here described is that it can be taught, not only theoretically, but by actual participation on the part of the student, and, owing to its extreme simplicity and the lack of complicated apparatus, it can be carried into practice by occasional operators at a distance from clinics, who may thus be made entirely independent of commercial sources except for a supply of raw material.

REMOVAL OF A DERMOID CYST AND A DECOMPOSING
FETUS FROM THE UTERUS BY ABDOMINAL SECTION;
WITH REMARKS.

BY

J. A. SUTCLIFFE, M.D.,
Indianapolis, Ind.

In April, 1902, Dr. T. W. Longfellow, of Windfall, Ind., referred to me a married lady, the wife of a farmer, on account of an abdominal enlargement. She was thirty-seven years old, and the mother of seven living children: six boys and one girl, the youngest being two years of age. She was stoutly built, weighing 170 pounds.

This patient had been feeling badly and losing flesh and strength for three months previous to the above date. She experienced considerable pain in the abdomen and pelvis, especially on the left side. There had been no chills, nor appreciable elevation of temperature. Menstruation had been regular every month. Morning sickness and the ordinary changes in the breasts characteristic of pregnancy were absent. Over the surface of the abdomen the enlargement was more apparent on the left side, and to the sense of touch was soft, with circumscribed fluctuation. Digital examination per vaginam detected a smooth, solid mass, of rounded contour, in the upper part of the left side of the pelvis and lower part of the abdomen, the size of an average orange. The uterine cavity was elongated to the extent of several inches. The diagnosis made was that of a dermoid or fibroid tumor, associated with either pregnancy or some form of cystic growth.

To the patient, the idea of pregnancy was out of the question. She declared that, with her extended experience, if there were any symptoms in this world with which she was familiar, they were those of pregnancy, and she was positive that such a condition did not exist. She was operated upon at the Protestant Deaconess's Hospital, April 30, 1902. The abdomen was opened and a dermoid tumor removed, which contained a large mass of hair, with some pieces of bone.

The uterus was enlarged, but did not present the rounded, tense outline as ordinarily seen in pregnancy. It was more like a partially distended fluctuating sac, with the anterior and left lateral walls exceedingly thin; so much so, indeed, that it would seem

to have very little, if any, contractile power. The conditions presented were so peculiar and out of the ordinary that it was a question as to the nature of the contents. With a fine hypodermic needle a few drops of dark fluid were withdrawn, which was construed as evidence that if the fluid was amniotic the fetus was not alive.

The viscera were protected with an abundance of gauze, and hemorrhage controlled by constricting the cervix. An incision was made into the uterus sufficiently large to admit the index finger, which detected a four-months' fetus, partially decomposed. The incision was enlarged and the fetus and placenta were carefully removed through the wound. The placenta was attached to the posterior wall. The cervix was dilated from below with a dilator, and the cavity irrigated from above downward with a weak bichloride solution. The uterine wound was sutured, uniting the serosa and muscularis but avoiding the mucosa, after which the abdomen was closed. The patient's pulse never arose above a hundred, nor the temperature above a hundred and one. She made a rapid and perfect recovery, and has remained well up to the present time.

While the literature upon this peculiar class of cases is somewhat limited, it would seem that such a condition might result from the lodgment of the ovum in the tube, near the uterine cornu. As the ovum increases in size it grows in the direction of least resistance, and gradually changes its position from extrauterine to intrauterine. During this process the uterine wall about the cornu becomes enlarged, softened and thinned, while the remaining portion of the organ takes but little part in these changes. A somewhat similar condition may be brought about when, from some lesion, fecundation takes place in the uterine wall, the so-called intermural or interstitial pregnancy.

While the results in the above case were all that could be desired, conservatism and a desire to accomplish the best results with the least risk prompts the question as to whether or not the patient would have been so fortunate had we been content, after removing the tumor, to simply rupture the membranes and trust to the uterus to expel its contents. The conditions to be met by treatment are very different with reference to whether the fetus is dead or alive.

Some of the arguments in favor of the course that was pursued are that the uterus was promptly and completely emptied, while, on the other hand, the result would have been indefinitely post-

poned. The hemorrhage was slight and under the control of the operator, while otherwise, the loss of blood might have been persistent, and manual compression for its arrest impossible over a wound in the abdomen.

The danger of septic infection ought to be less when dead tissue is promptly removed than when it is allowed to remain indefinitely in close proximity to an abdominal wound. Where the uterine wall is so attenuated, as in the present case, rupture is possible during the natural efforts at expulsion of its contents.

824 NORTH DELAWARE STREET.

PHYSOMETRA; PYOMETRA; HEMATOMETRA.¹

BY

ERNEST J. MELLISH, M.D.,

El Paso, Texas.

Formerly Instructor in Surgery, Rush Medical College—In affiliation
with the University of Chicago.

(With two illustrations.)

THE cases here reported are presented because of their rarity and, also, some unusual features connected with each case.

Physometra is usually found during the period of gestation or the puerperium associated with sepsis. Rarely it accompanies pyometra (pyo-physometra), as in a case reported by Kelly, in which a malignant neoplasm gave rise to occlusion of the cervical canal. When physometra accompanies pregnancy or the puerperium it is due to infection by a gas-producing microbe, and not, as was formerly supposed, to the formation of blebs in a macerating fetus or the introduction of air from without.

The case here reported is of special interest as an example of one of the dangers incident to untreated retroversion. Further, it is uncommon in that the infection occurred through the lymphatics or blood-vessels and not directly through the cervical canal from manual or instrumental intervention.

The natural habitats of the bacillus *aërogenes capsulatus* are the intestinal canal and the soil. This bacillus is the usual cause of emphysematous gangrene, the infection, in the vast majority of cases, coming from without and occurring in a wound. The

¹Presented before the El Paso County Medical Society, Sept. 24, 1904.

prognosis is not very unfavorable when the disease is accessible, uncomplicated, and early subjected to good treatment, namely, perfect drainage and thorough disinfection. In one case of this character, engrafted on a case of general sepsis, I obtained a recovery. In emphysema of the fetus, puerperal endometritis and uncomplicated physometra due to this bacillus the prognosis is good, while in emphysema of the uterine wall and in puerperal gas sepsis the result is almost invariably fatal (Welch).

In the Boston Medical and Surgical Journal, 1900, cxliii, 73, (quoted in Gould's American Year Book of Medicine and Surgery, Vol. on medicine, 1902) W. H. Welch treated this subject fully, covering the ground from the time he discovered the bacillus (1891) to date.

The case of "simple" pyometra was somewhat unusual in that the cervix and os were so completely obliterated. When pyometra is due to senile endocervicitis the canal is usually obliterated higher up, and a sound can be introduced, pushed through, and the opening dilated. By far the commonest cause of pyometra is the presence of malignant neoplasms or sloughing benign tumors.

The specially noteworthy features in the case of fibromyoma of the cervix are, that the tumor had so completely obliterated the cervical canal; that menstruation continued in nearly normal degree from the canal below the tumor; and from the comparatively slight symptoms accompanying prolonged atresia of the cervical canal. The tumor evidently developed in the posterior wall of the cervix and caused obliteration of the canal by pressure, eventually occupying the center of the cervix, with the cervical walls equally thinned in the entire circumference.

The case of fibromyoma with hematometra is alone in its class, so far as any records at my disposal are concerned. Under the conditions present in this case one would expect to find pyometra, since these conditions must have been accompanied with inflammation due, probably, to infection. Of course, the infection may not have been pyogenic, and there is a strong possibility it was syphilitic. The most surprising thing about it is the division of the uterine cavity by a septum extending diagonally from a point just below the right cornu downward and to the left, making two cavities of nearly equal length, one including the cervical canal, while the other included the openings of both oviducts.

Physometra.—Mrs. H. G., aged 37. No history obtainable on admission to the hospital, Sept. 2, 1903, except that she had amenorrhea with gradual enlargement of the abdomen for several

months, and pain during the last two or three months. The temperature and pulse range the first day in hospital was as follows: 9 A.M., 101° F., and 86; 12 M., 100.6° and 90; 4:30 P.M., 101.6° and 80; 7 P.M., 102.2° and 94.

Physical examination: Abdomen greatly distended and tense, as from ileus low down. Below the umbilicus was a tense, tympanitic swelling the size of an orange and a similar swelling occupying the normal position of the cecum. These were taken for intestinal loops, although they were much more tense than any distended intestinal loop I had ever observed. Vaginal examination revealed a rounded mass pressing downward and filling the whole pelvis. This was diagnosed as the retroverted and probably gravid uterus. The os could not be palpated, nothing presenting excepting this smooth, globular mass. The pain and soreness were but moderate in degree.

The picture was in part one of ileus. A high enema containing asafetida was given, with the result of obtaining two free bowel movements within three hours. The tympany, however, was but partially reduced. An enema of magnesium sulphate, 125 grams; glycerin, 125 c.c.; water, 1,000 c.c. was given in the afternoon, with the result of producing a free, loose movement. There still remained some tympany, but it was less diffuse. After preparation for celiotomy, an abdominal dressing of turpentine and olive oil was applied and left on over night.

Sept. 3, 6:30 A.M.; temperature 100, pulse 90.

Operation: Ether anesthesia. Median incision to the umbilicus. The tympanitic swellings proved to be the anterior uterine wall unevenly dilated, greatly congested or inflamed, and very thin. The uterus, which was extended nearly to the umbilicus, was adherent everywhere except to the anterior parietes. The fundus and the posterior and lateral walls were literally dug out of the pelvis. During the process the uterus was unavoidably ruptured, giving exit to extremely fetid gas and a quantity of dark red fluid, which was also fetid. As much of this fluid as possible had been aspirated after opening the abdomen. Although the general peritoneal cavity was packed off with gauze, there was necessarily some contamination of the peritoneum contiguous to the wound. The uterus was completely retroverted and the cervix was pulled up above the pubis and flattened out ribbonlike, as well as greatly elongated. After supravaginal amputation of the uterus careful toilet was made, and the abdomen closed without drainage. The patient was in the operating room nearly

two hours and during the operation was given about 1,000 c.c. of physiologic salt solution subcutaneously. On return to bed the patient seemed in very good condition, although the pulse rate was 140. At 12 M. the temperature was 99.8, pulse 134; at 4:30 P.M., 102.8 and 124.

Sept. 5, 6:30 A.M., temperature 100, pulse 120. The patient had been comfortable, had not vomited and appeared to be improving. The bowels moved well spontaneously. She drank water freely and took nourishment in the form of beef juice and malted milk. Late in the forenoon she became worse, sank rapidly and died at 11 P.M. Abdominal autopsy showed that she died of septic peritonitis or septic absorption from the peritoneum. There was a considerable quantity of fetid serous fluid in the cavity, but no tympanites.

Specimen: The uterus, which was very friable and presented large areas of blood extravasation into its tissues, contained a decomposing fetus which appeared to have advanced in gestation to six or seven months. It was undergoing liquefaction and all bones were nearly separated from the soft tissues. There was gas beneath the integument and in the skull cavity. Besides the products of conception, the uterus contained a considerable amount of semiliquid blood.

The cause of the condition in which this patient was found was probably—it might be said undoubtedly—a retroverted uterus which became incarcerated. The larger the uterus became the less possible was it for the contents to be extruded normally, because the cervix became increasingly flexed and finally rose to a position above the pubic bone.

Physometra is a somewhat rare condition. In the majority of text- and reference-books I have seen it is not mentioned. Howard Kelly, in his *Operative Gynecology*, mentions that he had seen three cases, two complicating large sloughing fibroids, and one associated with a pyometra due to a cancerous cervix. Kelly also describes a case reported by George W. Dobbin,¹ the first case in which the *bacillus aerogenes capsulatus*, the usual cause of the tympany, was demonstrated antemortem. In the case here reported we were unsuccessful in cultivating the bacillus. Putrefaction of the products of conception is probably the most frequent cause of physometra.

Pyometra.—Mrs. X., aged 65, mother of several children, en-

¹Puerperal Sepsis due to Infection with the *Bacillus Aerogenes Capsulatus*, Johns Hopkins Bulletin, Feb., 1897.

tered the Augustana Hospital, Chicago, in April, 1894, while I was acting surgeon during the absence of Dr. A. J. Ochsner. The patient was sent to the hospital with a diagnosis of osteosarcoma of the sacrum. No history was obtained, beyond the statement that she had suffered a moderate amount of pain in the pelvis for many months and had experienced an increasing amount of discomfort accompanied with malaise. She was a large woman and seemed well nourished. There was a slight elevation of temperature.

Physical examination revealed the presence of a large globular tumor filling the pelvis and encroaching on the abdominal cavity. There was no special sensitiveness to bimanual pressure. There was distinct fluctuation, although the tumor was very tense. It did not involve any of the pelvic bones. At first it seemed as though there was no sign of an os to be found, but soon a slight crescentic ridge was made out near the anterior fornix of the vagina which I diagnosed the remains of the anterior lip of a lacerated cervix. This gave the clue to the nature of the tumor, which was then diagnosed as pyometra.

Operation: Without anesthesia, free crucial incision was made posterior to the crescentic ridge, giving exit to a large quantity of non-fetid pus. For a few days a rubber drain was employed and then a glass dumb-bell drain was substituted. The patient left the hospital in good condition about three weeks after the operation. There was a small discharge of pus for a few days after operation, after which there was only a slight watery discharge for a short time. The patient was instructed to return if anything unfavorable occurred. We heard nothing further from her, and a year or two later I was unable to trace her. This case of pyometra was probably due to senile endocervicitis with ulceration and adhesion.

Pyometra, with Fibromyoma of the Cervix.—Mrs. R., aged 35, octooroon; a little above medium size and well nourished. Mother died of unknown cause; father died of cholera, and eight brothers and sisters of yellow fever; one brother living and well.

The patient had always been healthy until present trouble began, excepting for an attack of pneumonia when she was 15. She menstruated at 14 and continued to menstruate normally until after marriage. She was married at 21, became pregnant almost immediately, and aborted at five months, since which time she has not conceived.

The first she noticed of her present trouble was five years ago,

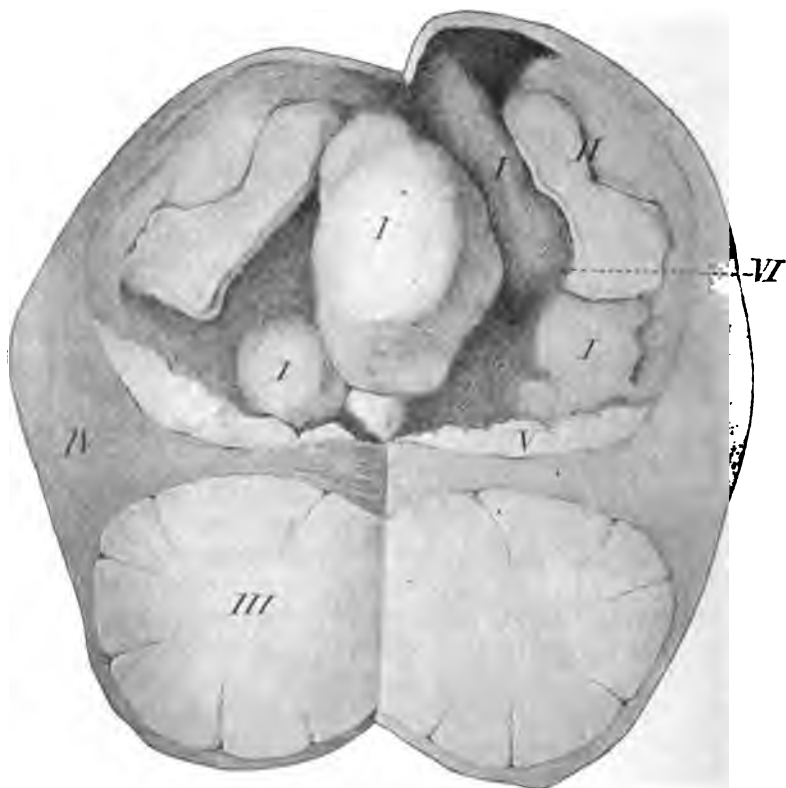
when she menstruated profusely during one regular period, immediately after which she discovered a tumorous enlargement in the hypogastrium. The tumor increased in size slowly until two or three months ago, when it seemed to rise suddenly in the abdomen. Until three months ago menstruation had continued normal, with the exception mentioned. Since then the flow has been more profuse and has lasted four days instead of three. Two years ago the patient had "rheumatism," affecting the right lower extremity for three months, and then changing to the left. This trouble continued in varying degree until about three months ago, since which time she has had no pain in the extremities. During the time she had the pain it was always worse when she was on her feet. The last three months there has been much soreness and pain in the lower part of the abdomen and in the pelvis, especially on riding or walking.

Examination demonstrated the presence of a uterine tumor extending to the level of the umbilicus. The upper part of the cervix projected into the vagina as a globular, hard body, while the fundus seemed somewhat boggy, and regular in outline. There was moderate tenderness of the tumor and pelvic structures to pressure, and relative immobility of the tumor.

The patient was admitted to Hotel Dieu Hospital Aug. 27, 1904, with a temperature of 99.6° F. and a pulse rate of 90. The next day the temperature ranged from 99 to 99.8°, and the pulse rate 84 to 88, with the patient in bed. At 7 A.M., on the 29th, the temperature was 99° and pulse 84.

Operation: Aug. 29th; ether anesthesia; incision through left rectus up to umbilicus. The tumor could not be lifted out of the pelvis until a rather difficult dissection of its lateral attachments had been made. About three-fourths of the cystic left ovary was removed with the tumor. After amputating the cervix close to the tumor the cervical canal, which was small and difficult to locate, was cauterized with 95-per-cent. phenol and buried in the stump by means of catgut sutures. Before completion of this step of the operation the right ovary, buried in adhesions, was located, and several small cysts incised and treated with tincture of iodine. The dilated right oviduct, the distal extremity of which constituted merely a thin-walled, egg-sized cyst, was found deep in the pelvis and was dissected out with considerable difficulty. It extended downward as far as the internal anal sphincter. The peritoneum was sutured over the entire wound with a continuous suture of catgut. No ligature was used.

During the first and second days the patient was quite comfortable, but on the third she had persistent epigastric pain and the temperature reached 102.6° ; pulse, 128. This pain may have been pulmonary or diaphragmatic, as she had a severe bronchitis for a few days after this, with a temperature range of 99.8 to 103° and and the pulse 110 to 130. There was a thick abdominal adiposus and serum collected between the cut surfaces. After the cavity



Uterus, laid open anteriorly, from case of fibromyoma with pyometra. I. Fibro-myxomatous tumors. II. Fibromyoma blended closely with uterine tissue and presenting a submucous lobe. III. Cervical fibromyoma. IV. Uterine tissue. V. A fatty, mucoid tissue. VI. Partially degenerated mucous membrane. (Free-hand drawing, $\frac{1}{2}$ natural size.)

had been open a few days there was a show of pus. Otherwise the recovery was uneventful.

The specimen weighed a little less than three pounds. On examination of the cut surface of the cervix at the point of amputation it was found that the amputation had been made close to

a cervical fibroid about 8 cm. in diameter, and that the cervical canal was completely obliterated a half cm. above the point of amputation. On cutting into the body of the uterus approximately 500 c.c. of bloody pus escaped. The wall at the fundus was very thin. Projecting into the cavity of the uterus were several submucous fibromyxomatous tumors (see Fig.). The cervical tumor was very firm in consistency and had but a thin tunic of uterine tissue. Microscopic examination of this tumor demonstrated it to be a pure fibromyoma. The submucous tumors were of similar character, but with much less fibrous tissue, and presented areas of myxomatous degeneration.

From the appearance of the specimen there can be little doubt that the cervical canal was obliterated for a long time—probably years. If this is so, then the menstrual discharge must have come from the unobliterated portion of the canal, which was only that of the portio vaginalis, unless it be assumed that some of the blood came from the vaginal mucous membrane—a rather unlikely assumption. Considering the conditions found, the symptomatology was mild.

Hematometra, with Fibromyoma Uteri.—J. O., aged 42, menstruated at 14, regular and otherwise normal; general health good. Married at 15; two children, youngest now 19. Widow 14 years.

This patient had good health until four years ago, when she noticed a small tumor in the hypogastrium and at the same time began to suffer from dysmenorrhea, menorrhagia and metrorrhagia, which increased in severity to the time of operation. She sometimes flowed an entire month. Her suffering from pelvic and back pain was almost constant, until finally she became entirely disabled from work.

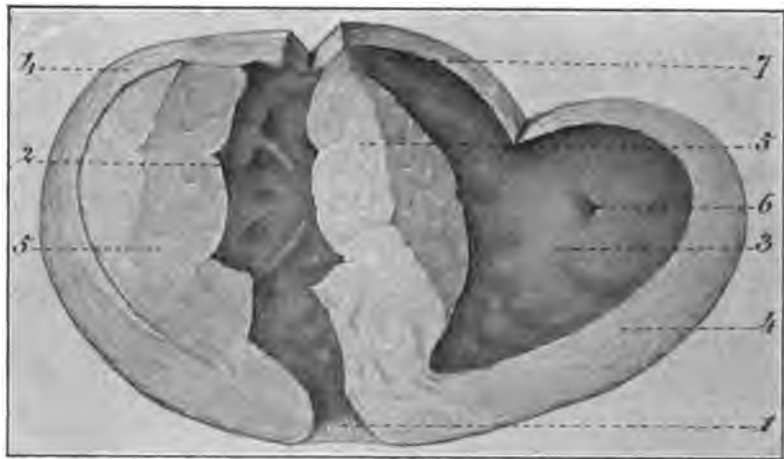
Status presens, on admission to Hotel Dieu Hospital, Oct. 22, 1903: General condition rather poor, as though from long suffering and moderate fever. The temperature ranged from 99 to 100.6° F. (mouth); pulse, 100. During the next two days the temperature ranged, 98 to 99.4°; pulse, 56 to 84; the following day, 98 to 98.5° and 60 to 80° respectively. No heart lesion found; urine practically normal. During four days she was given nutritious diet and otherwise prepared for operation.

The tumor was the size of a six-months' gravid uterus, reaching nearly to the umbilicus. To bimanual palpation there was a sense of fluctuation or pseudo-fluctuation, together with rather marked immobility of the mass. Pronounced tenderness to pressure of the tumor and surrounding pelvic structures.

Operation: Oct. 26; ether anesthesia; 18 cm. median incision; supravaginal panhysterectomy; extensive adhesions; 1 litre physiologic salt solution left in peritoneal cavity.

Oct. 26 to 30, high temperature, 99.4° ; pulse, 100 to 120.

Oct. 31, temperature reached 102° ; pulse, 100 to 120, due to bronchopneumonia. This was probably due to coldness of her room—an unavoidable condition brought about through repairs being made on the heating system. The bronchopneumonia subsided within 3 days, after which the temperature remained normal



Uterus, case of J. O., laid open anteriorly. 1. Upper part of cervical canal. 2. Part of uterine cavity. 3. Remainder of uterine cavity, completely isolated from the other (lower) portion. 4-4. Thickened uterine wall. 5-5. Tumor mass. 6. Opening of left oviduct. 7. Opening of right oviduct. (Free hand drawing, reduced one-half diameter.)

and the pulse ranged from 80 to 100. She left the hospital Nov. 23d feeling well.

Pathology: After removal the uterus was incised anteriorly, through the thickest part of the tumor, into the cervical canal, thence upward to what appeared to be the fundus. To the left remained a large fluctuating mass, which on incision proved to be the major portion of the uterine cavity. It was distended with old menstrual blood and detritus, and into it opened the oviducts (see Fig.). This cavity was completely isolated from the cervical canal, which constitutes the peculiarity. This, it would seem, could have occurred only as a result of destructive inflammation

of a considerable area of the mucosa and subsequent adhesion of the denuded surfaces. It is probable that after the submucous tumor had attained a considerable size a portion of its mucous covering ulcerated away. The amount of fluid in the cavity of the uterus was approximately 250 c.c. (8 f. oz.).

Microscopic examination of sections of the tumor showed it to be a fibromyoma with considerable round-celled infiltration, indicating either inflammatory action or malignancy (sarcoma).

GUARANTEE TRUST BUILDING.

PREGNANCY COMPLICATING FIBROIDS. REPORT OF A
CASE.¹

BY
D. W. BASHAM,
Wichita, Kansas.

(With two illustrations.)

THE frequency of pregnancy complicating fibroids is a matter difficult to determine, but it is by no means rare, for it has come under my own observation several times.

In many cases of fibroid uteri the disturbance of function is so considerable as to preclude the possibility of pregnancy. The presence of submucous fibromata or intramural tumors situated nearer the mucous than the peritoneal surface interfere with the chances of conception because of the vigorous contractions and hemorrhages occurring at more or less frequent intervals. The distortion of the uterine canal and the disarrangement of the epithelium of the uterine mucosa may have something to do with the prevention of pregnancy in the presence of fibromata.

Fibromata are said to occur mostly in women who have not borne children. The reason for this is perhaps in the fact that women who have fibroid uteri do not become pregnant readily. Pregnancy is possible in the presence of fibromata when the tumors do not encroach upon the cavity of the uterus, as where they are pedunculated or sessile upon or near the peritoneal surface.

¹Read before the South Kan. Dist. Med. Society at Wichita, on Oct. 18, 1904.

It is said that when pregnancy occurs in connection with fibromata it is almost always in patients married after thirty, or in those where sterility has existed for several years. Satisfactory figures relating to the frequency of pregnancy in connection with fibroid or myomatous uteri are not to be obtained. There is also much division of opinion concerning the danger of pregnancy in the fibroid uterus. Sutugin published his conclusion upon the subject in *Wratch* in 1891. He says that scarcely one-fifth of the cases of pregnancy complicated with fibroids terminate without surgical intervention, and that one-third of the mothers and one-



Fig. 1.—Anterior view of pregnant uterus with tumors.

half of the children perish as a result of the condition. On the other hand, Halliday Croom, of Edinburgh, in the *Edinburgh Medical Journal*, says that fibroids seldom occasion any trouble in case of pregnancy.

The increased vascularity of the pelvic organs in the presence of a gravid uterus causes fibroids to grow with exceeding rapidity. The tumors are very liable to break down and take on septic changes under the increased pressure toward the close of gestation. There is, beyond question, a greatly increased liability to puerperal infection in the myomatous uterus, and the infection,

when it does occur, is accompanied by greater danger than when it occurs under ordinary conditions.

The situation of the tumor is important in determining its influence, deleterious or otherwise, on the course of pregnancy. A fibroid with a pedicle attached toward the fundus uteri exercises but little influence over the gravid uterus. Any tumor which does not encroach upon the uterine cavity and which does not become incarcerated in the pelvis can do but little harm even in the presence of pregnancy. Tumors situated in the inferior segment render delivery extremely difficult, or altogether impossible, if the



Fig. 2.—Posterior view: Uterus incised, showing fetus attached by umbilical cord.

growth be large. Broad ligament tumors are obstacles in the way of successful delivery.

The management of a case of pregnancy complicated with fibroids depends upon the situation and size of the tumor, and the degree of advancement of the pregnancy. Before the third month almost every one advises evacuation of the uterus. Kieffer, in the *Gazette Hebdomidaire* for 1897, specifies four indications for hysterectomy, namely: When the tumor alone demands interference; when the size and situation render labor impossible; degeneration of the tumor; when the Cesarean operation is found necessary.

Jepson has published a case of pregnancy with triplets complicated with fibroids in which he performed hysterectomy with success. There are a number of cases where myomectomy has been done, and the pregnancy has gone on to term and successful delivery.

In doubtful cases it requires the finest judgment to reach a decision as to whether hysterectomy or myomectomy shall be performed. When the tumor is subperitoneal or pedunculated, and interference is necessary on account of the size, or degeneration of its substance, or twisting of a long pedicle, myomectomy should be chosen, and may be done without influence on the pregnancy.

If, however, the tumors involve the lower segment of the uterus, and are interstitial or sessile, hysterectomy is the only proper procedure. One authority has said in the treatment of fibroids complicated with pregnancy proceed just as you would where pregnancy does not exist. The existence of pregnancy does not seem to complicate the operation in the least, nor exercise any influence whatever over the result obtained.

Myomectomy, in suitable cases, is a benign operation, but it is not to be forgotten that a good part of the cases of pregnancy complicated with fibroids and which are amenable to treatment by myomectomy would do well if left alone until the natural termination of pregnancy.

There is a class of cases, however, where intervention is imperative. This comprises those cases where the tumors occupy the inferior zone of the uterus and compromise the space in the pelvic outlet, and would prevent engagement of the head and rotation if engagement were possible. There are but two procedures to be thought of in this class; the one is artificial evacuation of the uterus before the third month, the other is hysterectomy. If the case has been allowed to go to term either by design or oversight, the Porro operation is the one to be employed.

In view of the fact that pregnancy in a fibroid uterus is, in many instances, a condition of serious import, I have felt justified in presenting this communication, hoping that we may be able to define a line of conduct to be pursued in the presence of the various complications that may be encountered in the management of these cases.

I do not advocate the artificial evacuation of the uterus excepting when the condition of the patient is such as to increase the danger attending the operation of hysterectomy.

Myomectomy may be done when the judgment of the operator justifies the procedure.

Hysterectomy should be the procedure of election in all cases where the inferior zone of the uterus is involved, and especially when the volume of the tumor is sufficient to interfere with parturition. I can conceive of certain rare conditions that might justify non-interference until full term, when the Porro operation should be done.

CASE.—Mrs. C., aged 37 years, married four months. Her family history was good and she always had good health excepting she had been treated for kidney trouble a few months prior to her marriage.

Two months after marriage her menses ceased and she thought herself pregnant. Two months later she discovered a tumor in the lower part of the abdomen. She called her husband's attention to the growth, and both were surprised at the size. I saw the case on August 19, and made the diagnosis of multiple fibroma of the uterus complicated with pregnancy. The lower part of the uterus contained one large fibroid and several smaller ones. One was situated in the left broad ligament and presented downward, causing the cul-de-sac to bulge.

Various tumors could be demonstrated occupying the hypogastrium and extending as high as the umbilicus. Owing to the dangerous location of the tumors, and the patient being in good condition for operation, hysterectomy was advised.

She entered St. Francis Hospital on August 20, and on August 24 supravaginal hysterectomy was performed, no special difficulty being encountered. Recovery was uneventful, and she left the hospital at the end of four weeks. The uterus contained a mass of fibromata, in the center of which was a two-months' fetus.

ALBUMINURIA AND NEPHRITIS OF PREGNANCY AND LABOR.

BY

ROBERT W. STEWART, M.D.,
Cincinnati, Ohio.

THE ever-interesting problems of the relationship of pregnancy and labor to kidney changes and to eclampsia has engaged the writer for a number of years. Anything, therefore, which seems to throw light upon this subject is, to his mind, a justifiable basis for an article, for even if the matter be not finally settled, there is always the probability of a nearer approach to the truth.

IN THE AMERICAN JOURNAL OF OBSTETRICS, Vol. XLVIII, No. 21, 1903, the writer published the results of four hundred and forty-two examinations of the urine of eighty-five pregnant women. Of these specimens nine were taken during the second month, seventeen during the third, twenty during the fourth, forty-three during the fifth, forty-four during the sixth, sixty-nine during the seventh, seventy-one during the eighth, and one hundred and sixty-eight during the ninth. Thirty-eight of the women were primiparæ, twenty-one secundiparae and twenty-six multiparæ. The range was, certainly, a fairly comprehensive one.

Albumin was found in thirteen cases, or 15.3 per cent. Not a trace of it was found, at any time, in seventy-two cases, or 84.7 per cent. It occurred seven times in the ninth month, or oftener than in all the other months combined. In eleven of these cases it disappeared, and in one, in which casts appeared, even these disappeared under medical treatment. In one case the albuminuria persisted.

The details of the examinations of the urine in this last mentioned case are repeated here for purposes which will appear further along.

Mrs. K., primipara.

May 25, 1901.—Sp. gr. —; neut.; no albumin; no sugar; epithelium.

June 20.—Sp. gr. 1022; acid; no albumin; no sugar; epithelium cal. oxalate.

July 26.—Sp. gr. 1020; acid; trace albumin; no sugar; one long hyaline and one hyalo-granular cast; few leucocytes. There is some edema of face and extremities. Patient was put to bed; milk diet with plenty of water, and calomel gr. 1-10 every half hour for ten doses were given. Salts next morning.

July 29.—Urine showed: Sp. gr. 1031; acid; faint trace albumin; no sugar; one granular cast; few leucocytes; epithelium.

Nothing further developed, and the urine was found to be free of all danger-threatening elements on August 2d, 13th and 24th, September 2d and 5th. The last-mentioned was voided about four hours before labor began. Confinement September 5th.

Undoubtedly here was a mild case of nephritis, which yielded readily to the treatment indicated. It was so much like all the other cases of albuminuria except for the occurrence of casts, so much like them in yielding to treatment, that one can scarcely conceive of there being any difference but one of degree in the two processes.

The characteristic which dominates the results of these investigations is that simple flushing out of the bowels, and incidentally the kidneys, restores to the normal what might have proved to be a serious pathological lesion in the pregnant woman, and that, too, without in any way interfering with the pregnancy. Clinical evidence is frequently taken as proof of pathological condition without any greater strain upon the credulity than is here presented and, if there were no other factors to be considered, it would not be claiming too much to say that the pregnancy had but little, if anything, to do with the occurrence of albuminuria, or even of nephritis. This characteristic certainly goes a long way in proof of the falsity of the theory that pregnancy produces a persistent and increasing tendency to the production or retention of poisonous materials in the mother's system. This view is strengthened by the fact that in the cases reported there was no return of the symptoms after they had once been removed, and particularly by the fact that 84.7 per cent. pregnant women showed no albuminuria.

The writer has now to add to these cases the record of five cases which show evidences of the nephritis of pregnancy.

CASE I.—Mrs. S., multipara. Last menstruation August 15-18, 1902. Quickening, December 20, 1902. Time of expected confinement, May 22, 1903.

November, 1902.—Urine: Sp. gr. 1015; acid; no albumin; no sugar; epithelium.

Dec. 12,	Sp. gr. 1015; acid; no albumin; no sugar; epithelium
Jan. 17, 1903,	" 1020; " " " " " "
March 23,	" 1008; " " " " " "
May 2,	" 1010; " " " " " "
May 27,	" 1010; " " " " " "

Patient delivered May 28, 1903, 2:25 A.M.; F.; R. O. A. Normal, but prolonged, labor (12 hours).

May 28, 10 A.M., urine drawn by catheter (strict asepsis). First since labor: Sp. gr. 1016; acid; moderate amount of albumin; no sugar; one hyaline, one epithelial cast, 8-10 leucocytes; epithelium. Treatment as before mentioned was instituted.

May 29, Sp. gr. 1022; acid; no albumin; no sugar; epithelium

May 30, " 1023; " " " " " "

June 2.—Sp. gr. 1020; acid; no albumin; trace sugar; few leucocytes; three long hyaline casts, on border line between casts and cylindroids.

June 4.—Sp. gr. 1014; acid; faint trace albumin; trace sugar; few leucocytes; epithelium. Quantity in 24 hours, 68 ounces.

June 3.—Sp. gr. 1014; acid; faint trace albumin; no sugar; epithelium; one cylindroid; few leucocytes.

June 11.—Sp. gr. 1012; acid; very faint trace albumin; epithelium.

June 15.—Sp. gr. 1011; acid; no albumin; no sugar; few leucocytes. Complete recovery.

CASE II.—Mrs. H. Primipara.

This patient was sent to me August 11, 1902, with the statement that she was within about a week of term and that albumin had suddenly developed in the urine.

Previous history good; a little nervous at times, otherwise no evidence of constitutional ailment; fairly developed and nourished; anemic. Heart and lungs normal; abdominal enlargement showed patient to be near "term;" fetus, L. O. A. position and alive.

No untoward event had marked the course of a normal pregnancy until two or three days before my first visit, when albumin in moderate quantity was found in the urine. The patient had been spending the summer in a Michigan resort where the climate and hygienic surroundings were of the best, but her physician, Dr. B. K. Rachford, felt that, should anything occur, the facilities for treatment were not so good as he could wish.

The urine showed on date above mentioned Sp. gr. 1016; acid;

considerable albumin; no sugar; no casts; no red blood cells; a few leucocytes; quantity of urine small; some epithelium.

The patient was put to bed; milk diet ordered, and small doses of calomel given at short intervals (gr. 1-10 half-hourly for 20 doses); salts ordered for morning. The quantity of urine could not be estimated for 24 hours, as the patient had been on a railroad train for that time. The absence of casts and other evidence of serious kidney lesion warranted waiting before proceeding to active interference.

August 12, 1902, A.M.—Patient did not sleep well, complains of headache, is extremely irritable and inclined to vomit. Bowels have moved freely after salts and enema. Urine: quantity, 24 hours 12 oz.; sp. gr. 1022; acid; albumin greatly increased; no sugar; two hyalo-granular casts; occasional red blood corpuscles; some leucocytes.

Here was a decided change for the worse in the kidneys, as well as in the patient's general condition. The symptoms of headache, nausea and irritability; the increased quantity of albumin, the presence of red blood corpuscles and casts, and especially the diminished quantity of urine, were of a decidedly threatening nature. There was also some edema of the lower extremities. There could be no question that we stood in the face of an impending disaster: that if the woman were not speedily delivered puerperal eclampsia would probably supervene and the lives of both mother and child be put in extreme jeopardy.

It was decided to deliver by accouchement forcé. Accordingly the patient was completely anesthetized with chloroform; the vulva and vagina were thoroughly cleansed; cervix dilated, first by aid of Goodell's dilator and then by fingers of operator, the whole proceeding taking about twenty minutes.

High forceps (Tarnier's axis traction) were then applied and a living female child delivered.

Placenta followed in twenty minutes. There was an unimportant laceration of the cervix, which was not repaired. Perineum was torn down to the muscle. This was immediately sutured.

August 13.—Patient passed a fairly good night and is feeling quite comfortable this morning, in spite of a slight headache. She is very pale. T. (mouth), 98 F. Uterus well contracted. Lochia, normal.

Urine, first since labor, showed:

Sp. gr. 1003; acid; trace albumin; no sugar; loaded with casts; hyaline, granular and epithelial; no red blood corpuscles.

Ordered: Absolute quiet; milk diet; plenty of water; blue mass, gr. V this evening and Rochelle salts in the morning. Baby doing well.

August 14.—Had a good night; bowels moved freely; no headache; T. 98 F.; last evening, T. 99 F. Urine abundant and showed: :

Sp. gr. 1006; acid; small amount of albumin; no sugar; casts diminished, but still numerous.

August 15.—Urine: Sp. gr. 1013; acid; traces albumin; no sugar; two casts; leucocytes.

August 16.—Sp. gr. 1014; acid; trace albumin; no sugar; casts, scarce; a little pus.

August 17.—Sp. gr. 1017; acid; trace albumin; no sugar; no casts; slightly cloudy from pus.

I need not follow the case further. Recovery was complete within a month. Patient nursed her child.

CASE III.—Mrs. G. Secundipara.

Last menstruation, November 29-December 6, 1902. Life at three months. Time of expected confinement, September 5, 1903.

This patient also came from some Michigan resort and was near term. I saw her August 24, 1903. Albumin had appeared for the first time about a week before, but in very small quantities.

Previous history good. No evidence of constitutional ailment; well developed and nourished; some edema of wrists and ankles. Her first child was born twenty months ago and is healthy. There was at no time during that pregnancy any evidence of kidney disturbance.

Heart and lungs normal; "near term." Fetus R. O. A. position and alive.

Pregnancy had been normal until a week ago, when edema had necessitated examination of urine. The finding of albumin caused Dr. Rachford to send her to me.

Urine showed: Sp. gr. 1011; acid; much albumin; no sugar; no casts; few leucocytes; quantity of urine abundant.

The same orders as were given in Case I were issued. There was no indication for active interference. Lithia water was given in large quantities.

August 26.—Patient's general condition excellent; bowels have moved thoroughly; quantity of urine over three pints in last 24 hours.

Sp. gr. 1015; acid; albumin very much increased; cloudy from pus; no sugar; pus, epithelium, no casts.

August 28.—General condition very good; is hungry; passed three to four pints urine.

Sp. gr. 1006; acid; albumin much less; no sugar; no pus; some epithelium.

August 29.—Urine unchanged.

Normal labor came on about 3.30 P.M. and was ended at 6:30 P.M. No lacerations. Living female child. Placenta in ten minutes.

August 30.—Condition excellent; slept well. Urine was drawn by catheter four hours after labor and showed:

Sp. gr. 1022; acid; albumin enormously increased (almost solid in test tube); no sugar; few leucocytes.

August 31.—Condition very good; bowels thoroughly moved by blue mass and Rochelle salts. Urine in 24 hours, 68 oz. Sample drawn by catheter at 6:30 A.M. showed:

Sp. gr. 1011; acid; albumin decreased, but still in large quantity; no sugar; epithelium.

September 3.—Continued improvement in general condition; passes between three and four pints of urine in 24 hours. This A.M. showed:

Sp. gr. 1021; slight increase in quantity of albumin; no sugar; seven or eight narrow, short hyaline and one granulo-hyaline casts; few leucocytes.

September 5 and 7.—Albumin much diminished; no casts; urine abundant.

September 9 and 10.—Albumin same; 7-8 short, narrow hyaline casts.

After this date the casts never appeared again. The albumin steadily diminished in quantity, and the patient's general condition improved satisfactorily.

The urine was examined carefully from time to time, but the patient refused to diet herself and allowed herself to become much engrossed in social duties. She returned for treatment January 19, 1904, although she could not see any reason for restraint. The urine showed: Sp. gr. 1008; acid; moderate amount albumin; no sugar; few leucocytes and some epithelium; calcium oxalate.

I could do nothing with her in the way of diet or care and have not seen her since, but she was apparently perfectly well in October, 1904.

CASE IV.—Mrs. M. Primipara.

Last menstruation April 21-28, 1903. Expected confinement January 28-February 5, 1904. Previous history: Always healthy; no diathetic condition. Family history good.

October 2, 1903.—Urine: Sp. gr. —; acid; no albumin; no sugar; epithelium; calcium oxalate.

November 10.—Sp. gr. —; acid; no albumin; no sugar; epithelium.

December 1.—Sp. gr. —; acid; loaded with albumin; trace sugar; one short and one long hyaline cast; few leucocytes; numerous fat globules; epithelium. Quantity of urine, abundant.

Milk diet and calomel were ordered as in the other cases and the patient put to bed.

December 2.—Bowels moved freely; slept well and feels no discomfort; some edema of hands and feet.

Urine: Sp. gr. 1012; acid; albumin unchanged; no sugar; a little pus; epithelium; *no* casts.

At 7 P.M. labor began spontaneously. Abdominal distention so marked as to suggest the possibility of twins, but only one fetal heart could be positively diagnosed.

As the casts had disappeared and the patient's general condition was good, there was no apparent necessity for active interference and labor was allowed to proceed naturally. At 11 P.M. low forceps were applied to head because of disposition of occiput to remain fixed under the symphysis pubis and the consequent descent of head sidewise, thus making presentation of right ear. A male child, small, badly nourished, was easily delivered without damage to perineum or cervix. It was then discovered that there was another child in a separate bag of waters. This child, a female, was expelled in footling position spontaneously, together with its amniotic sac and placenta, in fifty minutes. Then followed placenta of first child.

Weight of each child, two pounds.

December 3.—Patient had a good night, has some headache; lochia, normal. Urine, drawn by catheter eleven hours after delivery, showed: Sp. gr. 1015; acid; albumin, much increased; no sugar; loaded with casts, granular, hyaline and epithelial; a few leucocytes; epithelium.

December 4.—Urine: Sp. gr. 1010; acid; moderate amount of albumin; no sugar; one hyaline cast; epithelium. This urine was drawn by catheter thirty-three hours after delivery.

December 5.—Patient's general condition excellent. Urine

abundant. Sp. gr. 1010; acid; moderate amount of albumin; no sugar; epithelium; *no* casts.

From this time the patient did well in every respect; the urine, however, continued to show a slight trace of albumin until January 18, 1904, since which time it has been normal.

The first child lived. Was kept in incubator for one month. The second child died eleven hours after birth.

CASE V.—Mrs. R. Secundipara.

Last menstruation May 4-11, 1903; expected confinement, February 8, 1904.

Previous history good; no diathetic condition; first labor normal; no kidney lesion discovered.

Family history, good.

December 8, 1903.—Urine: Sp. gr. 1005; acid; no albumin; no sugar; epithelium.

December 22.—Sp. gr. 1015; acid; no albumin; no sugar; few leucocytes; epithelium.

January 5, 12, 18 and 25, 1904.—Examinations gave about the same results. Indican, none.

February 1.—Sp. gr. 1008; acid; trace albumin; no sugar; few leucocytes; epithelium.

The usual orders as to quiet and diet were given.

February 2 and 3.—Sp. gr. 1012 and 1017; acid; small amount albumin; no sugar; epithelium; few leucocytes.

February 4.—Sp. gr. 1017; acid; albumin unchanged; no sugar; two hyaline, two granular casts; few leucocytes; epithelium; no indican.

February 5.—Sp. gr. 1012; acid; albumin, unchanged; no sugar; *no* casts; few leucocytes; epithelium; no indican; quantity urine, good.

February 6.—Sp. gr. 1012; acid; moderate amount albumin (doubled); no sugar; one granular cast; few leucocytes; epithelium.

February 7.—Sp. gr. 1012; acid; albumin, unchanged; no sugar; one hyalo-granular cast; few leucocytes; epithelium.

February 8.—Sp. gr. 1017; acid; considerable albumin (increased); no sugar; many casts; hyaline, granular and epithelial; few leucocytes; epithelium. Twenty-four ounces in 24 hours.

As the albumin had steadily increased in quantity and the casts had become so numerous, the patient was anesthetized with chloroform; the vulva and vagina thoroughly cleansed, the cervix dilated as in Case I. and the high (Tarnier's axis-traction) forceps ap-

plied to presenting head of child, which was in R. O. P. position. Extraction was easy. It was then found that there was a second child in a separate bag of waters. The feet could be palpated. Membranes ruptured, and this child extracted with ease. The placenta came away in ten minutes and was found to be one mass, as though two placentæ had been fused at the edges of two contiguous sides. The whole procedure took thirty minutes; the time of administering chloroform, forty minutes. Both children living, females. 10 P.M.—Patient in good condition. Lochia, normal. Urine drawn by catheter; Sp. gr. 1018; acid; very much albumin (double that before); no sugar; sediment a mass of casts (granular), immense numbers; a few hyaline and epithelial casts; indican present.

February 9., 6 A.M.—Patient had good night; urine drawn by catheter; Sp. gr. 1020; acid; small amount albumin; no sugar; about half as many casts (many hyaline); epithelium; moderate increase in indican.

Diet restricted to milk, and water given plentifully. Ordered blue mass gr. v this evening and salts in the morning.

The patient continued to improve so satisfactorily—went through normal convalescence, indeed—that there shall be given only the records of the examinations of urine.

February 10.—Urine, by catheter; Sp. gr. 1017; acid; faint trace albumin; no sugar; one hyalo-granular cast; epithelium; uric acid cryseals; indican present in normal quantity.

February 11.—Urine, not by catheter; Sp. gr. 1016; acid; small amount albumin; no sugar; leucocytes; red blood corpuscles (these last undoubtedly from mixture with lochial discharge).

February 13.—Sp. gr. 1023; acid; trace albumin; no sugar; leucocytes; epithelium.

Patient made successful recovery from this time; albumin disappeared in ten days, and urine has been normal now for months.

It may be stated here that none of the old cases nor the ones presented as new in this article showed diathesis, such as syphilis, rheumatism, malaria, tuberculosis or chronic Bright's disease. There was, in short, nothing in any of the cases, aside from the pregnancy, to account for the kidney disturbances—at least, nothing that was apparent.

The following facts will be noted by referring to the details of the cases:

1st. In four of the cases of nephritis herein related there was at no time any deviation from the normal as regards the kidneys

until within the week preceding the delivery; in one the nephritis appeared first at first catheterization after labor. It might be added that three were under the writer's observation for months before delivery, and two were under the care of a competent physician.

2d. In four cases there was, after the appearance of albumin, a marked increase in the quantity thereof and then the appearance of casts, leucocytes, etc., in increasing quantities before delivery, and a very decided increase in all these constituents immediately after confinement.

3d. In two cases there was marked diminution in the quantity of the urine; twelve and twenty-four ounces, respectively, in 24 hours.

The characteristics of Cases II, III, IV and V as distinguishing them from the cases referred to in the first part of this article is, that the treatment which had been so successful in the latter was of no avail in them. It can hardly be claimed that the treatment was successful in Case I, for the reason that the woman had been delivered and this may have produced the good result.

The next characteristic of all of these cases (except possibly Case III) is that the ending of the pregnancy was followed in a relatively short time by a cessation of all threatening symptoms.

Another point of some importance, in view of the idea that labor itself produces kidney lesion, is that in all cases except No. I the symptoms began to appear before labor set in and continued for a variable length of time after the delivery had been effected. In this connection it must not be overlooked that in two cases (II and V) labor could have had no possible influence in the production of nephritis, for the reason that there was no labor, the woman having been thoroughly anesthetized and delivered by accouchement forcé.

There may have been some causal relation in two of the cases between nephritis and the occurrence of twins, but attention is called to the fact that one of these patients was delivered at the seventh month of utero-gestation and the combined weights of the two fetuses was only four pounds, not much more than half that of the ordinary child at term.

Case IV may possibly be somewhat different from the others, because of the persistence of the albumin for months after delivery. One is inclined to believe that here was something that showed permanent lesion, and that the pregnancy had nothing to do with it. At the same time there was a gradual increase in albumin up to delivery and immediately thereafter, with the ad-

dition of casts after parturition and then complete cessation of all symptoms except the albuminaria. Even this was markedly diminished.

If we carefully go over the details of all these facts as herein presented, we will find that of the cases of albuminaria all yielded to medical treatment but one, even Mrs. K.'s case, which cannot be called anything but a mild nephritis, followed the same course, and did not show any signs of a return even four hours before confinement. A remarkable showing, certainly, if the pregnancy had anything to do with the kidney trouble. Another thing will be apparent. Mrs. K.'s case differed only in degree from all the cases of nephritis which are herein reported. The albuminuria, the casts while transient, still showed while they existed very similar, if not actually identical, characteristics with those of the more pronounced cases. And although the symptoms disappeared in the one case and did not in the other, it is not stretching the facts to fit a theory to say that all of the cases had a similar origin. The fact is to be noted further that in none of the cases of nephritis was there during the whole course of the pregnancy, until the last week in four of them, and after labor in the other, any symptom which pointed to a deviation from the normal function of the kidneys.

Another fact is, that in one of the cases, although the labor was ended and the casts had disappeared, the albumin continued to show even for months after delivery.

There is, to say the least, a great similarity in the cases, and one of two conclusions must be true, either the pregnancy caused the kidney troubles or it did not. For the former speak the occurrence of albuminaria and nephritis during the pregnancy; the prevalent belief among obstetricians that a causal relation exists between the two, and the disappearance of all symptoms in the great majority of the cases, after labor had been completed.

For the latter speak the facts that in the great majority of cases (84.7 per cent.) there were absolutely no symptoms which pointed to a change in kidney function; that in the overwhelming majority of cases the albuminaria disappeared under medical treatment, although the pregnancy was not interfered with; that there was no return of symptoms in any case when once they had disappeared, and particularly in the one case in which even nephritis had shown itself; that in two cases, one of albuminaria and one of nephritis, the symptoms persisted, in one after treatment and in one after

delivery, leaving in the latter case the strong inference that some other factor had been the cause of the nephritis.

In this connection and as having some bearing on this last-mentioned question there follows a statement of the relative frequency of albuminuria in the different months of pregnancy.

Month	2	3	4	5	6	7	8	9
No. Exams.	9	17	20	43	44	69	71	168
Albumin found ..	0	0	1	0	1	3	1	7
Percentage	0	0	5	0	2.3	4.3	1.8	4.1

It will be seen that although the number of times in which albuminuria was found exceeded in the ninth month that found in all the other months combined, the difference arises from the relatively greater number of examinations made during that month. The percentage in this ninth month was less than that of the fourth and seventh months. Particular attention is called to the disparity between the seventh, eighth and ninth months. It is not going too far to say that if pregnancy were a potent cause in the production of albuminuria, the examination of the urine should show a constant increase in the number of cases in which it would be found, the further the woman progressed in gestation. These figures do not bear out any such assumption. The writer is perfectly aware of the fact that a number of observers (Fischer, Trautenroth, Knoblock and others) have shown that albumin occurs in the great majority of cases of pregnancy. He can only say in this connection, that his examinations were made with the greatest care and are sufficiently numerous to give a fair criterion of the condition of the kidneys during pregnancy.

What, then, is the explanation?

Does the pregnancy produce pressure upon the veins and so a damming back of the blood into the system and thence into the kidneys? The facts presented decidedly controvert such a view.

Does the pregnancy bring about an imperfect metabolism? Is there a stopping short of perfect digestion and a consequent absorption of leucomaines? Does the metabolism of the fetus throw into the maternal circulation poisonous materials? In short, does the pregnant woman constantly produce poisons which may under certain conditions destroy the organism, or at least prevent the functions of the kidneys, as Bouchard and others claim? If these things be true, it is remarkable that so few women give evidence of these tendencies, and that, of those who do, the majority recover their equilibrium after the exhibition of

measures which cannot, by any possibility interfere with the processes mentioned.

Full recognition must be given to the objection which will be urged to this statement, namely, that so long as the excretory apparatus is in perfect order, the poisonous materials will be thrown off and the proper balance of health maintained. Is it not a little singular that although "the effort at self-poisoning" must still be going on, that is the pregnancy still persists, the simple means of restoration should have been so effectual as to prevent a recurrence?

It would not be difficult to understand how the cleaning out of the bowels and incidentally of the liver, by the means which were used, would carry out of the system products of decomposition (ptomaines) which if left therein might produce poisoning. Is any other conclusion logical from the clinical facts presented? The conclusion is not far fetched that in the cases of simple albuminuria, the pressure of the enlarging uterus upon the intestines produced sluggishness in peristalsis and consequent constipation; this in turn caused retention of the products of decomposition, their subsequent absorption into the general system and thus additional work was thrown upon the kidneys; the consequent effort upon the part of the kidneys to throw these products out of the system, would in time produce hyperemia of those organs, kidney bag, and hence albuminuria. Thus could we also account for the great immunity which exists among pregnant women among the 84.7 per cent. who never showed albuminuria at any time. They are the ones who are in the physiological condition, so far as pregnancy is concerned.

As has already been intimated, the processes which result in albuminuria are probably identical with those which produce nephritis. The process means, in its simpler stages, simple albuminuria, with restoration to the normal by simply unloading the intestines and the liver; in its severer forms, in those cases in which the intestines are neglected or the digestion is overtaxed, the albuminuria does not yield so readily and the condition is not readily relieved; in the still severer forms hyperemia becomes more persistent, and then occur red blood corpuscles, leucocytes and casts—nephritis, in a word. There is no difficulty in understanding how this process, so simple at first, may lead to destructive action in the kidney.

Again, the pregnant woman is just as liable as, and from the facts here presented no more so, than the non-pregnant one is,

to disease or disturbance of kidney function. The pregnant woman may have albuminuria or nephritis from causes which would be operative in the other case and which would have no reference to the pregnancy. It is thus we may classify two of the cases reported in this paper.

The theory is so simple that one is inclined to question it on that account and yet it accounts for more facts than does any other theory which has received the sanction of the profession. It makes the hepato- and the auto-toxemias secondary factors and removes them from the category of primary or essential causes. In a measure a pregnant woman is, according to this theory, constantly trying to poison herself, but as is every other individual whose intestines do not perform their functions. We need not invoke pregnancy as the principal cause, as one is obliged to do if the other theories are followed.

THE ORTIZ.

DERMOID CYST OF THE OVARY COMPLICATING LABOR.¹

BY

WM. M. THOMPSON, M.D.,
Chicago, Ill.

IN studying the literature of ovarian tumors complicating pregnancy, and especially tumors incarcerated by the gravid uterus, one of the most prominent facts is the frequency with which the tumors are dermoid, and in many instances the dermoids are bilateral. In Olshausen's histories of 2,275 ovariectomies under all conditions, the number of dermoids was 80, or 3.5 per cent. Dsirne's statistics for 135 operations for ovarian tumors during pregnancy, the number of dermoids is 10, or 7.4 per cent.

McKerron has collected the histories of 862 cases of ovarian disease associated with pregnancy, of which 204, or 23.6 per cent. were dermoids. McKerron says this greater frequency of dermoids in pregnancy is not difficult to explain, as they are for the most part small, giving rise to no or few symptoms, until from their situation in the pelvis during labor, or from injuries which they may sustain in the abdomen during its progress they make their presence felt.

Another reason ascribed by Herman is that dermoids remain

¹Read by Invitation before the Chicago Gynecological Society, Nov. 18, 1904.

long in the pelvis, and that thus pregnancy is more likely to occur than in the case of a tumor early lifted up into the abdomen.

Whatever the explanation, the greater danger which attaches to dermoids during pregnancy, as is shown by the summary of the literature, renders the fact important.

SUMMARY.

	MOTHER		CHILD	
	Recovered	Died	Alive	Dead
IV. Left to Natural Powers...	4	3	1	1
V. Reposition.....	12	4	14	1
VI. Turning.....	5	8	4	6
VII. Puncture and Incision...	21	3	7	15
VIII. Forceps.....	7	1	1	2
IX. Craniotomy.....	2	3	0	5
X. Cesarean Section.....	4	2	3	2
XI. Abdominal Ovariectomy...	4		4	
XII. Vaginal Ovariectomy.....	4		2	2
Total.....	63	24	36	34
Mortality.....	28%		48%	

My case presented the following history:

Patient, Mrs. T., æt. 19, white, primipara. I first saw her at 12 o'clock October 28, 1904. She had been in labor twenty-six hours. During this time she had been anesthetized for some hours, and the high forceps applied, but traction did not engage the head, but only caused the recto-vaginal wall to bulge with a tumor like a child's head. Attempts made to reposit the tumor were unavailing. The patient was exhausted and the fetal heart sounds were not demonstrable. I placed her under deep anesthesia and attempted to return the tumor to the abdominal cavity, but failed. The operating room (a not overly clean kitchen) and the condition of the patient, combined with the fact that the fetus would probably not be viable, led me to choose vaginal section and puncture, with removal of the tumor if the contents could be drained off. The cervix was protected with gauze and the vagina sterilized as much as possible. A transverse posterior vaginal incision was made, the tumor drawn into the incision and tapped, and the contents—about three liters—drawn off. This enabled me to still further pull the tumor into the vagina. It was ligated and excised and the pedicle surrounded with gauze and returned to the abdominal cavity, leaving a strip of gauze in the incision as a drain.

An attempt was again made to sterilize the vagina, the gauze tampon removed from the dilated cervix, forceps were applied and the fetus delivered still born. The placenta followed in ten or fifteen minutes. The whole operation occupied nearly two hours. The patient was stimulated hypodermically and returned to bed in fair condition. She made an uninterrupted recovery with normal temperature on the second day. The gauze was removed from the abdomen in forty-eight hours.

Macroscopic and Microscopic Examination of Tumor.—The naked appearance of the specimen was that of the usual ovarian dermoid. The outer wall was covered evidently with a squamous epithelium. Within the cyst was to be found sebaceous material and rather blond hair and teeth. The microscopic specimens showed on one side a skin covered by stratified squamous epithelium without much cornification of the outer layer. Underneath this are accessory skin structures in great abundance. Hair follicles and sweat glands are to be found, but the most abundant structure is sebaceous gland. Beneath the skin is ordinary connective tissue. In this there is some muscle and some elastic tissue, but the most prominent tissue is white fiber. There is considerable adipose tissue in these connective areas. On the inside, especially in the large specimen, will be seen a quite imperfect skin layer. It is a stratified squamous epithelium without interpapillary processes. There are no accessory skin structures in these areas.

As you will see from the above, we find no structures either by naked eye or microscopical examination that do not belong to the epiblast or mesoblast. It could with propriety be termed a dermoid, although the consensus of opinion is that these ovarian tumors should be termed teratomata rather than dermoids.

REFERENCES.

- I. AM. J. OBST., 1895, Vol. 32.
- II. Pregnancy, Labor and Child-bed.
- III. Diseases of Women, p. 763.
- IV. Left to Natural Powers.
 1. Gelstron: Centralblat. of Gynak., 1889.
 2. Schaneburg: Praeger Vierteljahr, 1858.
 3. Stadfelt: Det Mekan mefort nuder Fodsl., 1872.
 4. Barnes: Sir George Haskell reports.
 5. Ingleby case.
 6. Ingleby case.
 7. Pryor: AM. JOUR. OF OBSTET., 1900.

V. Reposition.

1. Cecil: Am. Pract. & News, 1887.
2. Berry Hart: Scot. Med. Jour., 1902, I, 47.
3. Löhlein: Gynack, Tagesf. Heft., IV, 1895.
4. Spencer: Obstet. Trans., 1898.
5. Benckiser: Münch. Med. Wochens., 1899.
6. Munro Kerr: Obstet. Trans., 1901.
7. Ballantyne: Unpublished.
8. Matthei: Zentralblat. fur. Gynac., 1901, No. 3.
9. Bruce.
10. Camden.
11. Hardy: Lancet, 1845.
12. Rubeska: Monatschrift Geb. u. Gynak., 1895.
13. McKerron.
14. Bandelocque.
15. R. R. Kime: Georgia Journ. of Medicine & Surgery, 1899, Vol. IV.

VI. Turning.

1. ref. Bland-Sutton, Lancet, 1901.
2. Schwarz: Gynogyzat, 1897.
3. Spencer: Obstet. Trans., 1898, p. 331.
4. Lewers: Obstet. Trans., 1900, p. 95.
5. Kriorsch: Klinik Vortag. Bd.
6. Jobert: Gaz. Med., 25.
7. Marten's Worsk. Mag. Laegword, 1871.
8. Bisnier: Gaz. Med.
9. Moeller Diss: Berlin, 1869.
10. Hüfer.
11. Raynolds: Med. & Surg. Jour., 1892.
12. Lefholz: Inaug. Diss Halle, 1881.
13. Lefholz: ibid.

VII. Puncture and Incision.

1. Dushesneau: Archiv de Tocol., 1891.
2. Abegg: Jubil, Deutsch, Gesellsch für Gynak., 1894.
3. Fieux: Archiv. clin. de Bordeaux, 1897.
4. Phillips: Obstet. Trans., 1898.
5. Mignard: Soc. de Med. de Lyon, 1898.
6. Puech: Gaz. de Hôpit., 1901.
7. Schatz: Münch Med. Wochens., 1901.
8. Edwards: Prov. Med. Jour.
9. Lewis: Exam., Phila., 1849.
10. Barnes.
11. Byford.
12. Beckling.
13. Wheelhouse: Brit. Med. Jour., 1868.
14. Hirst: Med. News, Phila., 1890.
15. Mart: Archiv. de Tocol., 1882.
16. Hohl: Archiv. für Gynak.
17. Ostermeyer: Zentralblat fur Gynak., 1897.
18. Biernacke: Diss., Berlin, 1887.

19. Fischer: Prager Med. Wochenschrift, 1893.
20. Barnes.
21. Litzmann: Deutsche Klinik, 1852.
22. Ruge: Berlin. Klinik. Wochenschrift, 1878.
23. Lever: Case.
24. Merriam.
25. Merriam.

VIII. Forceps.

1. Mallam: Archiv de Gynec. et d'Obstet., 1888.
2. Guichard: Ann. de Gynecol, 1886.
3. Bartlett: Obstet. Gaz., Cincinnati, 1886.
4. Cullingworth: St. Thomas Hospital Reports, 1887.
5. Dewar: Lancet, 1894.
6. Sevitsky: Ann. de Gyn. et d'Obstet., 1896.
7. Treub: Bull. Soc. Obstet. et Gynecol. de Paris, 1898.
8. Haultain: Jour. of Obstet. and Gyn. of Brit. Empire, 1902.

IX. Craniotomy.

1. Charleoni: Thèse par Cocard.
2. Bader and Schmidt.
3. Chiari: Klinik für Geb. u. Gynak.
4. Denman.
5. Herbimau.

X. Cesarean Section.

1. Bland-Sutton: Lancet, Feb., 1901.
2. Favell: Brit. Med. Journ., 1901, I, p. 581.
3. Stratz: Weebbl. ball. zet Nederl. Tyds. voor Geneesk., 1901, No. 6.
4. Furneaux: Jordan Trans. Brit. Gynec. Col. Soc., 1902.
5. Margne: Schmidt Jahrbuch, 1841.
6. Lyons Monthly Jour., 1845.

XI. Abdominal Ovariectomy.

1. Walcher: Med. Corres. Blatt, 1897.
2. Spencer: Obstet., Lis., 1898, p. 14.
3. Duncan: Unpublished.

XII. Vaginal Ovariectomy.

1. Archiv Clinic de Bordeaux, 1897, Vol. 6.
2. M. Trent.
3. Worsk-Mag für Laegerduesk Christiania, 1902, 4 R, XVII.
4. Thompson, W. M., 1904, Chic. Gynec. Soc.
5. Griffith: Communicated. Obstet. Trans., 1901.

THE EARLY DIAGNOSIS OF CANCER OF THE FUNDUS, WITH REPORT OF CASES.¹

BY

HUNTER ROBB, M.D.,

Professor of Gynecology in the Western Reserve University and Gynecologist-in-
Chief to the Lakeside Hospital,
Cleveland, Ohio.

(With three illustrations.)

THE routine examination of uterine curettings will undoubtedly enable us in many instances to make a diagnosis of cancer of the fundus in its very earliest stages, while, at the same time, it will probably demonstrate that cancer of the body of the uterus is of more frequent occurrence than has been generally supposed. The exact ratio between the incidence of cancer of the body of the uterus and that of the cervix has not yet been clearly shown. Tesson, in some recent statistics, found it to be from 1 to 4 in 10. Some authorities give the proportion as 1 in 50. Pozzi, in 214 cases of cancer of the uterus, found only 6 in which the process was confined to the body. Within the past six years we have met with 6 cases of cancer of the fundus in 42 cases of cancer of the uterus, *i.e.*, once in every 7 cases of cancer of the uterus.

Unfortunately, as happens also in cancer of the cervix, we do not often meet with the cases in their incipiency. Clinically there may be few, if any, symptoms of cancer of the body of the uterus, even although the condition may have been present for some time. Hemorrhage is less frequent than in cancer of the cervix, and does not as a rule appear until late in the disease, first, because the increase in the number of blood-vessels is not so great as in cervical growths; and secondly, because the diseased tissue is much better protected from any external injury, being enclosed on all sides by the uterine wall.

In fact there are no pathognomonic symptoms and in many cases the patient appears to be in the best of health. As the disease generally occurs in women between 50 and 60 years of age, we should always be on our guard whenever we meet with a patient who gives a history of a delayed menopause, or with a watery or

¹Read before the Clinical and Pathological Section of the Cleveland Academy of Medicine, October, 1903.

bloody discharge between the periods, or if after menopause has been passed at irregular or stated intervals a slight watery or bloody discharge is noticed on her linen.

Provided that cancer of the body is recognized before it becomes macroscopically evident and the uterus can be entirely removed, the prognosis for a permanent cure is good, since extension does not usually take place until late in the disease, and generally is not found in the operable cases. Nevertheless, several cases have been reported in which there was secondary involvement in the tubes and ovaries at a relatively early stage (Ries, Lohlein, Wehmer, Reichel).

In an analysis of 30 cases made by Cullen at the Johns Hopkins Hospital, 20, or 60 per cent., of the patients had remained free from any recurrence after periods of time ranging from 11 months to 6 years. Steinbach reports 23 cases, 13 of the patients remaining well after 3 or 4 years. Winter reports 30 cases, 16 of the patients showed no recurrence after 5 years. Two out of our three patients are still living and well; one two years and one three years after the radical operation.

The association of myomatous disease with adeno-carcinoma of the body of the uterus is not uncommon, inasmuch as myomata are so prevalent. As a rule, however, they are small and of no importance. In some instances they are large enough to produce symptoms that mask the cancerous condition.

The history of our cases, in brief, is as follows:

CASE I.¹—M. E. D. (patient of Dr. C. M. Hoover, of Alliance, Ohio). Single; age 58; occupation, housework; menstruation be-

¹This patient returned June 18, 1904—three years and eight months after the radical operation—complaining of having had some colicky pains in the lower abdomen off and on during the previous three months. In addition to these pains she had had shooting pains in the vagina and rectum. In January, 1904, she noticed the presence of some blood and mucus when the bowels were moved. In other respects she had been feeling very well. On examination the vaginal walls seemed perfectly free everywhere. In the pelvis and just beneath the promontory of the sacrum a rounded, somewhat irregular and rather hard tumor, of the size of a lemon, could be palpated. The tumor mass was firmly attached to the anterior rectal wall at this point. Per rectum the mass could be felt just beneath the mucosa of the bowel. On opening into the cul-de-sac on June 29th the tumor mass was found to have infiltrated the rectal wall to such an extent that a radical operation was contraindicated.

This case demonstrates that although the disease focus was removed while it was apparently confined to the fundus of the uterus, metastases occurred in less than four years.

gan at 12, irregular until about 20; menopause at 48. Leucorrhea slight in amount.

On admission, Oct. 23, 1900, the following record was made: Has had "female complaint" for 20 years. One year ago last July (1898) had aching and swelling in lower abdomen. In April had colicky pains and bleeding from the vagina as if she was going to menstruate; this lasted for several weeks; in August, 1900, she had a similar attack and a "regular hemorrhage."

Her previous and family history is negative. She looks worn; weight 148 pounds; bowels constipated; urination frequent.

Physical examination of pelvis and abdomen.—Outlet relaxed; vaginal walls prolapsing. Cervix in axis. Uterus in right lateral flexion, somewhat enlarged, movable. Left ovary cystic, not adherent; right ovary not made out.

The urinary analysis showed a trace of albumin and a few leucocytes before and after operation, but otherwise nothing abnormal. On October 24, curetting was performed; the material removed was more abundant than usual and there was considerable hemorrhage. Malignant disease having been diagnosed by examination of the curettings, on October 30 a vaginal hysterosalpingo-oöphorectomy was performed. The convalescence was uninterrupted, and the patient was discharged from the hospital on November 27, in good health.

Abstract of pathological report.—*Curettings.*—These are abundant and present a varying appearance on microscopic examination; some fragments show a very marked glandular hyperplasia, while in others an interstitial endometritis is most marked. Where the former condition prevails the surface epithelium consists of a single layer of tall columnar cells showing cilia in places; the cells are crowded together and form a fairly regular surface, but occasionally small projecting tufts are seen. The glands are enormously increased in number, the interstitial tissue being reduced to a minimum; the size is variable; most of them are small, although a number of large glands with secondary gland formations within them are encountered; the lumina are usually regular in outline and empty, but some contain blood, a clear mucoid secretion or a small amount of debris. The glandular epithelium forms a single layer of tall columnar cells closely crowded and showing frequent karyokinesis. The stroma is small in amount and seems completely crowded out from between many of the glands; it shows considerable cellular infiltration and the vessels are numerous. The appearance of the fragments present a typical pic-

ture of the malignant adenoma as described by Gebhard. Other fragments show only a few atrophic glands lined by normal epithelium, while the stroma is very dense and presents considerable cellular infiltration. Still other fragments show a condition intermediate between these two extremes.

Diagnosis.—Adenoma malignum corporis uteri. The uterus measures 7.5 cm. in length, 4 cm. in width at the cornua and 2.75 cm. in thickness; it weighs 38 gm.; the external appearance is normal. On section the cervical canal shows submucous ecchymoses due to the former curetting; the uterine cavity measures 3.5 x 1.75 cm. It is slightly yellowish in color with hemorrhagic areas. Near the fundus on the posterior surface is a small area, 7 cm. in diameter, slightly elevated, granular, showing a few

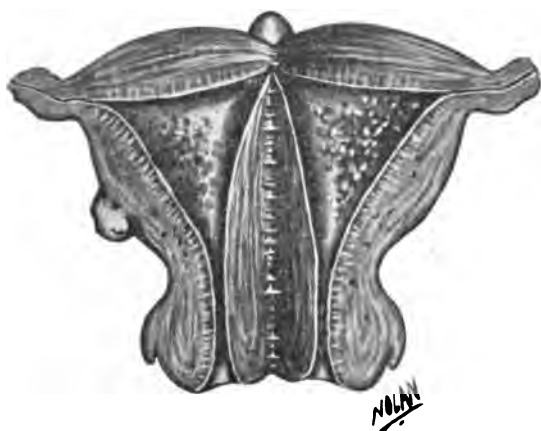


Fig. 1.

minute, dilated and cystic glands. Lower down on the posterior uterine wall is a second similar area, about 3 cm. in length. The remainder of the uterine cavity is smooth. In the left lateral wall is a small, interstitial myoma, less than 1 cm. in diameter (Fig. 1). The right tube and ovary are normal, except for a few light adhesions. The left tube and ovary are bound together by adhesions; the tube is thickened and occluded; the ovary is distended by a Graafian follicle cyst the size of a walnut.

Microscopically the uterine mucosa is scanty, most of it having been curetted away. When present, it shows a condition similar to that seen in the curettings. Remnants are found on the roughened areas noted macroscopically. The muscularis is normal and is not invaded by the neoplasm. The right tube shows a slight

chronic endosalpingitis with a few surface adhesions. The right ovary presents surface adhesions and the usual senile changes. The left tube is thickened by a diffuse chronic salpingitis. The left ovary shows surface adhesions and a follicular hypertrophy.

CASE II.—J. S. (patient of Dr. Dorman, of Ashtabula, Ohio). Age 40; married for 17 years; II-para, the last labor 8 years ago, the first instrumental; 1 miscarriage 12 years ago. The menses began at 11, regular, occasionally painful, duration one week usually, but of late more profuse and of longer duration; flowing when admitted. Leucorrhea, moderate in amount.

The present trouble began about one year ago with profuse menstruation which is becoming more pronounced every month. She has had several severe hemorrhages and on admission had been flowing continuously for 17 days. During the past week she has noticed low down in the right iliac region a tumor as large as an apple; there has been occasional pain in the lower abdomen; the bowels are loose; the patient is anemic, the hemoglobin being 55 per cent. The inguinal glands on the left side are slightly enlarged.

The urine showed a faint trace of albumin before, together with a few hyaline casts after, operation.

Pelvic examination.—Outlet relaxed, cervix far back and crosses axis of vagina, moderately deep bilateral laceration. Filling the cervical canal is felt a friable polypus. The uterus is enlarged and irregular in outline, suggesting a myoma. Both ovaries are small and freely movable.

On March 14, patient was curetted, the material being abundant.

On March 20, a combined vaginal and abdominal pan-hysterectomy was performed. Convalescence was uninterrupted except for a brief rise of temperature with slight aphasia for a few days after the operation. The hemoglobin was 75 per cent. when the patient was discharged, April 22, 1901.

The microscopical examination of the curettings shows the surface of the cavity to be very irregular, numerous finger-like growths, varying in length and shape, being present. The central stroma of these is somewhat loose and densely infiltrated with leucocytes. The epithelial covering consists of a single layer, or more often of two or more layers. Many of the processes consist of epithelial cells without any stroma. When occurring in a single layer the epithelial cells show elongate oval nuclei, staining fairly uniformly. Hyperchromatic forms are also found. The nuclei of the stratified epithelium vary in size, shape and intensity

of staining; a few very large forms with excess of chromatin occur; karyokinetic figures are often seen. There is marked leucocytic infiltration of the epithelial covering and degenerated areas occur in it. The glands are enormously increased in number and vary from the normal to typically malignant forms. They are very irregular in size and shape, are often lined by stratified epithelium and present villous-like epithelial tufts, with or without stroma, extending into the gland lumen and often reaching the stage of secondary gland formation. Some of the gland spaces are completely filled with epithelium; others contain desquamated and degenerated epithelium, leucocytes or a mucinous material. The epithelium for the most part is pale, swollen and somewhat degenerated. It is infiltrated with leucocytes and shows a few karyokinetic figures; in some places the nuclei are very irregular in size and shape and show an excess of chromatin. The stroma is fairly abundant, although crowded out from between many of the glands, it is densely infiltrated with leucocytes, except in the deeper part. Blood-vessels are very numerous. In places the tissue is quite necrotic.

Diagnosis.—Adeno-carcinoma corporis uteri. The tissues removed by hysterectomy consist of the myomatous uterus with both ovaries and Fallopian tubes. The uterus measures 14 cm. in length, 8 cm. in its antero-posterior diameter, 13 cm. in width at the cornua, 5.5 cm. in width at the internal os. The peritoneal surface is smooth except near the left cornu, where a small myomatous nodule, 1.5 cm. in diameter, can be felt in the posterior wall; near it are several smaller ones the size of peas. The uterine walls are thick and pale, averaging 3 cm. in thickness; the uterine cavity is 4.6 cm. in width. In the anterior wall of the uterus and filling the greater part of its cavity is a myoma 5.5 x 4.4 cm., partly submucous and partly interstitial; its surface is more or less rough, especially at the upper margin. The tumor is quite firm, except at its lower part where it is necrotic and yellowish-white in color. The left side of the uterine cavity extending down to within 1.5 cm. of the internal os, and part of the anterior wall present numerous little outgrowths, 2.5 mm. high, separated by furrows or sulci. They are most in evidence at the left cornu. The growth has invaded the underlying muscularis to a depth of 1 cm. in one place. The remaining mucosa of the uterine cavity is smooth but somewhat injected near the lower margin of the large myoma; the mucosa of the cervix is apparently hypertrophied (Fig. 2).

Microscopically, the cervix shows a marked interstitial cervicitis. The mucosa of the body, except in the papillary area, is thin; the glands are few in number and lined by normal pale epithelium. The surface epithelium, usually in a single layer of irregular cells, is occasionally stratified, but shows no apparent signs of malignant disease. The stroma shows a marked interstitial endometritis; the papillary area shows typical adeno-carcinoma, the appearance being similar to those described in the curettings. The margin is rather abrupt both in the mucosa and also in the muscularis; the latter shows a slight cellular infiltration



Fig. 2.

before the advancing growth, but at a short distance from it, it is normal. The characteristic feature of the growth is the large number of glands of moderate size and lined by a single layer of epithelium suggesting the malignant adenoma of Gebhard. The large myoma shows more or less complete hyaline degeneration. At its lower border it is quite necrotic with dense leucocytic infiltration.

The right ovary shows a slight oöphoritis and chronic peri-oöphoritis.

The right tube shows an acute catarrhal salpingitis. There is dense cellular infiltration and the lumen contains a small amount of purulent exudate. The left ovary and tube are normal.

CASE III.—J. McG.; age 52; married 26 years; III-para, oldest child 25, youngest 20; 2 miscarriages, last 22 years ago. Patient

well nourished, weighs 165 pounds. The menses began at 13; last regular period 2 years ago.

Present trouble.—For the past ten months the patient has had a slight leucorrhœal discharge with some odor, and more or less bloody, the color having been brighter of late.

The general physical examination was negative. The urine was normal before operation; afterwards it showed a faint trace of albumin and red and white blood cells.

Pelvic examination.—Outlet relaxed; cervix in axis; posterior lip somewhat irregular; uterus sagging in pelvis, somewhat smaller than normal, movable; fundus forward; lateral structures not clearly made out but no adhesions detected.

On June 18 the uterus was curetted and a portion of the cervix was excised for microscopical examination. The curettings were abundant, 15-20 times the normal amount. Anedo-carcinoma was diagnosed from the microscopical examination. Vaginal hysterectomy was performed June 27, 1902. The convalescence was uninterrupted.

The pathological appearance of the curettings varies in the different fragments. As a rule the surface epithelium forms little tufts with or without a stroma basis; the epithelial cells are mostly columnar but some are cuboidal. They vary from two to many layers in thickness; the cells differ in size; the nuclei lack uniformity in size, shape and position within the cell, and the intensity of staining. A formation of new glands from the surface can be seen. Large numbers of leucocytes occupy spaces between the epithelial cells. The glands are very numerous and in some areas completely displace the stroma. They vary in size and shape, some being much hypertrophied and showing secondary glandular formation within their lumina. The glandular epithelium is stratified and often completely fills the cavity; otherwise the lumina are of various sizes and shapes and contain desquamated epithelium, leucocytes and necrotic debris. The epithelium is infiltrated with many leucocytes. The cells vary in size and the nuclei also differ markedly in size and staining qualities; many karyokinetic figures are found. The stroma in the most affected areas is almost completely crowded out by the large masses of epithelium. Elsewhere it is less reduced and shows large numbers of vessels and more or less cellular infiltration.

Diagnosis.—Adeno-carcinoma corporis uteri. The uterus removed by vaginal hysterectomy measures 11.5 cm. in length and 8 cm. transversely. At the right cornu a small part of the

tube is found, 3.5 cm. long and .5 cm. in diameter. The cervix appears about normal except for the loss of a wedge of tissue removed for examination at the present operation. The uterine mucosa, about 2 mm. thick, is somewhat injected, but otherwise normal, except for an area about 2.5 cm. in width near the right cornu where a finely lobulated, soft, friable, yellowish-white papillary or cauliflower-like growth is found. This projects above the surrounding level and also hangs downward somewhat like a polyp over the normal mucosa at its lower limits. The



Fig. 3.

growth also invades the muscularis below it, the boundary line between the two being indistinct.

The uterine wall, as a rule, is somewhat thickened, but beneath the neoplasm it is but half as thick as on the opposite side in a similar position. The portion of Fallopian tube seems normal (Fig. 3).

Microscopically the cervix uteri shows a slight cervicitis; the endometrium of the corpus, as far as the limits of the polypoid growth, is thin with few glands of normal appearance and with a dense stroma, the surface epithelium being nearly normal. The border of the neoplasm is rather sharply marked. It is a typical adeno-carcinoma, consisting of large glands showing the formation of secondary glands within the main lumina and usually completely filled by the proliferating epithelium. The stroma is scanty and infiltrated with leucocytes, the appearances being similar to

those described in the curettings. The growth extends rather deeply into the muscularis, the latter presenting a marked leucocytic infiltration before the advancing margin of the neoplasm, while a short distance away the muscularis is practically normal.

For the report on the pathological findings and diagnoses, I wish to thank my colleague, Prof. Wm. T. Howard, Jr., and Drs. Wm. H. Weir and Charles D. Williams, of the Gynecological Department of the Lakeside Hospital.

702 ROSE BUILDING.

CYSTADENOMA OF THE PANCREAS; REMOVED BY ABDOMINAL SECTION.¹

BY

L. H. DUNNING, M.D.,
Indianapolis, Ind.

(With seven illustrations.)

THIS neoplasm is sufficiently uncommon to lend interest to single reports concerning it. The one I now present relates to a patient who was referred to me by Dr. Ball of Waveland, Ind., Sept. 2, 1903.

The patient, Mrs. S., aged 25 years, gave the following history: Two years and a half ago she was confined for the second time in a normal labor. Upon sitting up the first time, she noticed a "lump" in the left side, just beneath the short ribs. This lump has persisted ever since, sometimes seeming a little larger and sometimes a little smaller. She had suffered occasional attacks of severe pain, which seemed to be located in the region of the tumor. She says that during the attacks of pain she was unable to outline the tumor, but that a few hours after the pain disappeared the tumor again became prominent. The attacks of pain were so severe as to require the administration of morphine for their relief.

I saw the patient some months ago, and made a diagnosis of hydronephrosis. Upon examination, September 2d, the tumor was found to occupy, when at rest, a position just below the

¹Read at the Seventeenth Annual Meeting of the American Association of Obstetricians and Gynecologists at St. Louis, Mo., Sept. 13-16, 1904.

stomach, with the major part of it lying to the left of the median line. The lower border of the tumor lay slightly below the umbilicus and to its left. The tumor was quite movable and could, by gentle pressure, be made to bulge into the space between the crest of the ileum and short ribs upon the left side. It could be pushed to the right wholly or quite beyond the median line. With the patient in the erect posture, it descended so that the lower border was two or three inches below the umbilicus. The tumor was elastic, and fluctuation could be elicited. Movements of the tumor caused some little pain. When at rest there was a tympanitic note over its lower third, and when it was pressed into the



Fig. 1.—Cystadenoma. Front of tumor.

flank the tympany extended over the tumor to near its middle. The patient was positive that it varied in size, yet was sure there was no variation in the amount of urine voided, coincident with the variation in size of the tumor.

After a painstaking examination of the patient, I was still of the opinion we had to deal with an intermittent hydronephrosis in a case of movable kidney, yet there was some doubt in my mind as to the absolute correctness of my opinion. This doubt led me to do an unwise thing, namely, to attempt to draw off a portion of the fluid with a hypodermic syringe. The tumor was gently pushed into the left flank, and the syringe point thrust through the overlying structure into the cavity of the tumor. No fluid was obtained. The patient was sent to the hospital, and September 4, 1903, was operated upon. The ordinary vertical

incision was made between the twelfth rib and the crest of the ileum, as in cases of nephrectomy. After incising the lumbar fascia, the kidney was found in normal position and the lower and outer border of the tumor could, when gentle pressure was made upon it in front, be easily outlined in front of and to the right of the kidney.

The posterior incision was closed, the patient turned on her back, and an incision made in the left border of the left rectus muscle four inches from the costal arch downward. As soon as the



Fig. 2.—Cystadenoma. Posterior appearance of tumor.

peritoneum was opened there was an escape of a small amount of clear fluid of mucilaginous consistency. The tumor, as large as an adult's head, was delivered with some difficulty for, while it had a considerable range of motion laterally, backward and upward, I found it difficult to lift it out of the incision. The growth occupied the space between the stomach and transverse colon, the latter distinctly overriding its lower border. When the tumor was pushed backward and upward, the stomach overlapped its upper border. A portion—the anterior surface—had a yellowish-white appearance. The upper and middle portion of the anterior

aspect of the tumor was covered by omentum (gastrocolic), and the lower anterior aspect by the colon and greater omentum. The gastrocolic omentum spread out over a greater portion of the tumor.

I was soon convinced I had to deal with a cyst of the pancreas and, furthermore, felt confident I could enucleate it. To our satisfaction, this belief was fully demonstrated. I found the



Fig. 3.—Shows (a) main cyst wall of fibrous tissue and (b) secondary smaller cysts filled with mucoid material.

gastrocolic omentum pretty well fused with a small portion of the tumor upon its anterior surface in its center, as a ring or circle one inch in diameter. A little away from this circle the covering could be picked up with the forceps, so the incision through the structure overlying the tumor began at this point and was carried completely around the circle, the opening being carefully enlarged upward and downward in a vertical direction, and with blunt dissection the omentum and posterior layer of the mesocolon

were peeled off the tumor. We finally came to the point of firm attachment of the tumor to the pancreas near its left extremity. By exercising considerable care, the tumor was stripped off the pancreas without tearing into the glandular structure of the organ. Very little bleeding resulted from the enucleation. Three or four arteries were tied with fine catgut. The cavity left by the removal of the tumor was closed by a series of fine catgut stitches.

On enucleating the tumor the source of the fluid that escaped



Fig. 4.—Portion of small secondary cyst filled with granular matter.

through the incision as we opened the abdomen was found, and also the reason we failed to obtain fluid by aspiration. The fluid was too thick to enter the syringe point, and the opening made by the puncture of a fine hypodermic needle had not closed, but had enlarged and had allowed a gradual escape of a small amount of fluid into the peritoneal cavity. Some of this fluid was found in the pelvic cavity, and was sponged out by carrying the gauze sponge down into the pelvis. On account of this leakage of the

fluid, which I thought to be from a hydatid cyst, the abdomen was thoroughly irrigated with a normal salt solution and the pelvis was again mopped and dried with sponges.

The tumor was examined by Dr. Wynn, whose statement is herewith given, and also photographs of the tumor, and drawings from slides showing the cyst walls and acini.

Dr. Wynn's Pathological Report.—"The tumor submitted for examination is smooth, round, and about the size of a child's head



Fig. 5.—Showing (a) fibrous wall, (b) well-formed cysts and (c) beginning cystic change in acini.

at birth. The largest diameter is about six inches. There is a dense fibrous tissue capsule, varying from one to four millimeters in thickness. From the inner surface of the main cyst wall numerous cysts, forty or fifty in number, project into and fill the main cyst cavity. These vary in size from a small pea to a hen's egg. The cysts were filled with a slightly turbid, tenacious mucoid material. Under the microscope this was found to contain an abundance of granular debris, epithelial cells, and some

calcium oxylate crystals. A portion of a thin cyst wall was spread out upon a glass slide, and seen to be covered, more or less, with epithelium undergoing degeneration. After hardening a portion of the main cyst wall, sections of the same were made and studied in the usual manner. The microscope reveals at several points near the main cyst wall somewhat regularly formed acini lined by epithelium, showing varying degrees of degeneration and be-

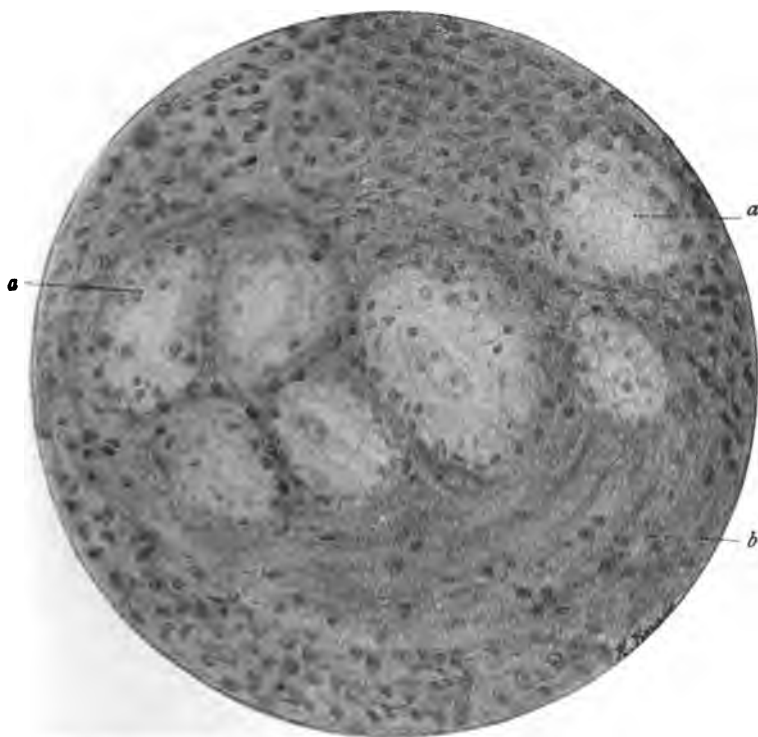


Fig. 6.—High amplification showing (a) glandlike acini lined by epithelial cells in (b) connective tissue stroma.

ginning cyst formation. While this adenomatous tissue is not typical of pancreatic tissue, it might pass for such. My first impression in the examination of this tumor was that it was an echinococcus cyst. I searched in vain for the hooklets. The further microscopic study, as detailed above and illustrated by the accompanying drawings, convinces me that the tumor is an adenocystoma of the pancreas."

Several interesting questions grow out of this case. What must

be the explanation of the seeming disappearance of the tumor? This question is considered worthy of note because the statement of the patient that the tumor "seemed to go away" when she suffered pain influenced me somewhat in making my diagnosis. I found, however, that by placing the patient upon her back with the head low I could cause all visible signs of the tumor to dis-

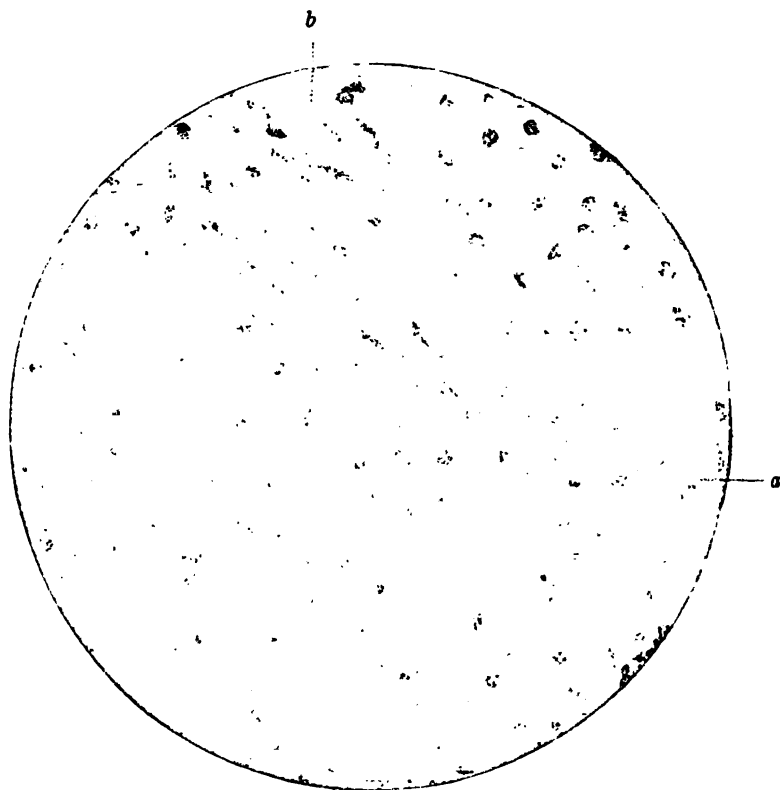


Fig. 7.—Portion of a very thin cyst wall spread out flat and showing (a) large polygonal epithelial cells and (b) connective tissue wall from which the epithelium is denuded.

appear, and found it difficult, even with deep palpation, to trace its outline. I have recently had a similar experience in a case of movable liver. In this latter case, when the patient sat up, a tumor in the epigastric region could be grasped between the hands. Dulness on percussion extended from the xyloid cartilage to the umbilicus. When the patient lay upon her back with her head low, the mass disappeared and the areas of dulness and tym-

pany were not markedly abnormal. Upon exploratory incision a markedly movable liver was found, which could be easily pushed down into the position occupied by the mass when the patient was in an erect position.

What relation did this tumor bear to the pancreas? It is called a pancreatic cyst, because it occupied the position usually occupied by such a cyst and was attached to the pancreas. The fluid was not tested to determine if it possessed any lyolytic properties. The pathologist, in his report, says: "While this adenomatous tissue is not typical of pancreatic tissue, it might pass for such." We have failed to demonstrate the presence of the two most positive signs of the pancreatic origin. It has, however, been the custom to classify cysts occupying a similar position and attached to the pancreas as pancreatic cysts. Our case bears a close resemblance to those of Bozemaus, Ranshoff, Vankreef, Martin, and the one pictured in Robson and Moynihan's book on "Diseases of the Pancreas," page 223. Robson and Moynihan state (page 202) that "unless a careful post-mortem examination is made, the origin of the tumor of the pancreas cannot be proved, for if the growth begins in the suprarenal capsule in adhesion to the pancreas, it is probably formed very early on the left side, and at the operation a portion of the pancreas may have to be removed." In my case the suprarenal capsule origin of the tumor may be excluded, I think, because when at rest it was two or three inches removed from the site of the suprarenal gland and kidney. Neither could the case described have been a cyst of the omentum, for it lay entirely behind the omentum. If it be true that there are sometimes remnants of the Wolffian body in the posterior layer of the mesocolon, there may be here an explanation of the origin of some of the tumors in this region. This growth had the gross appearances of many cases of ovarian cystoma I have extirpated.

There is a lesson in the mistake made in puncturing the tumor for diagnostic purposes. All late writers caution against this procedure, but it is surprising how frequently the error is committed. Disaster might have come to my patient had this proved to be a case of hydatids or a proliferating cyst of the pancreas. Certainly, an exploratory incision is less dangerous, and should be preferred.

In my patient, pain was the prominent symptom. It came usually after supper and was intense, requiring for its relief the administration of large doses of morphine. Freidrich has given

the name of celiac neuralgia to such attacks of pain attending pancreatic cysts. Vomiting, which is so common a symptom, was not present in my case. The urine was examined upon the day of the operation, and showed an absence of sugar. The stools were not examined. There was no jaundice, and the patient's general health was not greatly impaired, which fact may be accounted for in the absence of the involvement of much pancreatic tissue.

This case well illustrates the advisability of enucleating cysts of the pancreas when it is possible so to do. It is not at all probable that puncture and drainage would have resulted in a cure, for the reason that there were numerous cysts, and further cystic proliferation was in active process, as is shown in the accompanying drawings.

224 NORTH MERIDIAN STREET.

CORRESPONDENCE.

DOUBLE MONSTERS.

To the Editor of THE AMERICAN JOURNAL OF OBSTETRICS.

DEAR SIR: As I have recently become interested in a line of investigation which requires the careful examination of all forms of double monsters, I would be extremely grateful for the gift or loan of fetal or new-born specimens exhibiting any grade of this phenomenon. As such cases are rare, there is a natural tendency to store them up as museum specimens, in which state the benefit derived from them is inconsiderable, while a thorough anatomical investigation would yield far more important results. As I am working upon a definite problem at present, I do not care for other forms of monsters, such as those of the microcephalous, acephalous or amorphous types, but would include all those which exhibit a doubling of any axial part, ranging from single individuals with doubled median parts to two complete individuals united at a single point. Similar cases occurring among the lower mammals, or, in fact, any vertebrate will be of nearly equal interest.

For fresh material, the best preservative for my purpose is 5 per cent. formaline, i.e., the commercial article mixed with water in the proportion of 1 to 20 or thereabouts, although material preserved by any other method will be of value. In specimens larger than four-month embryos the thoracic and abdominal cavities should be freely opened to insure complete preservation.

For a more detailed description of the types of monster I especially desire, I may refer the reader to the enumeration of the various forms grouped under *Diplopagi* in my article in the *American Journal of Anatomy*, Vol. III, No. 4, Sept., 1904.

HARRIS HAWTHORNE WILDER.
Smith College, Northampton, Mass.

Dec. 15, 1904.

TRANSACTIONS OF THE NEW YORK OBSTETRICAL SOCIETY.

Meeting of October 11, 1904

The President, DR. GEORGE W. JARMAN, in the Chair.

DR. ABRAM BROTHERS presented the following specimens:

PAROVARIAN CYST WITH TWIST OF THE PEDICLE.

The patient was 27 years old, and admitted to Beth Israel Hospital on September 15, 1904. Menstruation began at 15, was of the four-weekly type, two days in duration, and free from pain. She was married seven and one-half years and had two children, the youngest two and one-half years ago. Four years ago she had a miscarriage. She has been a sufferer from chronic constipation and occasional headaches. Her last regular menstruation occurred three and one-half months ago. About three weeks previous to admission to the hospital she suddenly awoke in the night and found that she was bleeding profusely from the vagina. Pain was absent. For eight days she saw blood daily, until another large hemorrhage occurred. Since then she has seen a little blood every day, and has suffered some inguinal pain. There is also some difficulty and pain in voiding urine.

The pelvic examination made by one of the adjunct visiting surgeons of the hospital revealed a small vagina, bilateral laceration of the cervix, which was patulous; enlargement of the uterus corresponding to a ten-weeks' pregnancy. No pelvic masses were felt, although the lower abdomen was somewhat tender on pressure.

An attempt was made by treatment to prevent an abortion from taking place, but on September 22d the patient had a large uterine hemorrhage and aborted. There was nothing of importance during the next two weeks, at the end of which time she was prepared for a trachelorrhaphy to repair the lacerated cervix. I saw her for the first time on October 7th, under ether and ready for the operation. In accordance with my regular practice, I examined her under the anesthetic and discovered a fluctuating tumor, the size of a small fetal head, in the right pelvis, and entirely distinct from the uterus. The tumor was freely movable, and was readily recognized to be a cyst. The uterus showed a moderately large bilateral cervical laceration, but was hard, small and firm. The position of the patient was changed from the lithotomy to the partial Trendelenburg.

Operation.—An incision was made through the median abdominal wall and the smooth, transparent, glistening wall of the cyst recognized. The tumor was situated in the right pelvis, and was

perfectly free from adhesions. Although it occupied the right pelvis, the long, twisted pedicle led over the fundus uteri to the left cornua of the uterus and left ovary. The pedicle resembled an umbilical cord or rope, and showed three and one-half twists from left to right. There was no evidence of strangulation or impediment in the circulation of the pedicle or of the tumor. This seemed to indicate a twist of recent period. The left Fallopian tube was discovered as an elongated tape on the upper surface of the cyst which, with the ovary in the broad ligament below, proved the tumor to be an intraligamentary cyst. After clamping the pedicle the tumor was removed, the stump being sutured over after ligating individual bleeding points. The right adnexa were found to be normal. The abdominal wound was closed in three layers without drainage. Convalescence has so far been uninterrupted.

CASE II. PAROVARIAN CYST WITH TWIST OF THE PEDICLE. INTESTINAL OBSTRUCTION.

K. G., aged 20, single, entered Post-Graduate Hospital on June 8, 1904. I had been invited to examine her a few days previously at her house by Dr. Goldsmith. Menses had been absent, and there was a median supra-pubic tumor which excited the suspicion of a possible pregnancy. This was fairly excluded from the absence of other signs, but we decided to wait a while and watch developments. Symptoms of intestinal obstruction with persistent vomiting developed soon after, and I ordered her to the hospital at once. Under the use of high rectal enemata the bowels were moved, although there had been no feces or flatus passed in four days. She was improved so much that we decided to wait until a severe stomatitis, due to calomel absorption, had passed away before proceeding to remove the tumor, which was now clearly to be felt and probable twist of the pedicle diagnosticated. After fifteen days the stomatitis had nearly all gone and we proceeded to the operation.

On June 23, 1903, median laparotomy was done. The cyst wall looked blackish. It was the size of a cocoanut, was situated on the right side, and showed a twist of the broad ligament (which constituted the pedicle) of 180 degrees. The entire ovary lay in front of the tumor. There were evidences of recent peritonitis in the right pelvis, with light adhesions to the cyst wall. Patient made an uneventful recovery, and left the hospital after three weeks.

CASE III. OVARIAN CYST WITH TWIST OF THE PEDICLE, COMPLICATED BY PREGNANCY, WITH MACERATED FETUS, PERITONITIS, APPENDICITIS AND INTESTINAL OBSTRUCTION.

S. K., aged 26, married seven years, the mother of three children, youngest two years and four months (October 1, 1904).

In February, 1904, she had an attack of right lumbar pain, suggesting renal colic complicating early pregnancy. This was

my diagnosis, when asked to examine her by Dr. Wolf, of Yonkers. Her menses were not entirely absent, however, and we considered the possibility of a pelvic tumor. The menses remained away completely after May.

I saw her again in the latter part of August. She had been to the mountains, when she was suddenly taken with collapse symptoms and sent on to New York, after efforts had been made during three or four days to overcome an attack of acute intestinal obstruction, during which neither feces nor flatus passed in spite of numerous purgatives and enemata. She was vomiting incessantly when I saw her this time. There was little elevation of temperature, but her pulse was 150 to 160 per minute and she was suffering agonizing pain in the abdomen. A tumor could be mapped out corresponding to a full-term pregnancy, the vulva was blue, the cervix gaped, and the breasts contained colostrum. There was evidently peritonitis, intestinal obstruction and pregnancy. The abdomen was exquisitely sensitive and fetal parts could not be mapped out, although apparently fetal heart sounds could be heard in the left inguinal region. She required a hypodermic of morphine to ease her sufficiently before removal to the Post-Graduate Hospital.

On her arrival at the hospital she was examined by Dr. Boldt, who agreed in the diagnosis in every respect, excepting that he advised the use of medicated enemata before proceeding to artificially empty the uterus. Under this treatment the bowels moved the same night.

The patient was left alone until September 6th, when, because of persistent pains and because I felt the normal period of pregnancy had long been passed. I decided to examine her under anesthesia and induce labor. The cervix was dilated instrumentally sufficiently to admit the tip of the index finger, but nothing could be definitely made out. During the examination the bag of water ruptured, and a bougie was introduced into the uterine interior. The cervix was very rigid, and it was only after using the Barnes bag for forty-eight hours that a decomposed fetus of about four months' growth was expelled. A large tumor was felt in the right abdomen, and was easily felt to be a cyst. From this time on the patient's condition became normal; the pulse, however, still ranged between 90 and 100.

On October 1, 1904, I performed a median laparotomy. A large, blackish ovarian cyst, the size of a football and weighing three pounds, was found on the right side, adherent to intestine omentum and appendix. The pedicle was followed over to the left corner of the uterus, and presented a twist of more than 360 degrees, with signs of beginning spontaneous amputation. The tumor was easily removed. The right ovary was enlarged, and also removed. The appendix, which was as thick as a finger and showed inflammatory changes at its tip, was also removed. The patient's progress has been perfectly uneventful, and she expressed a desire to go home on the seventh day.

DR. JOSEPH BRETTAUER.—These cases are of rather frequent occurrence, but if they happen to be on the right side, they are very often sent to the surgeon under the misapprehension that they are cases of acute appendicitis. I can recall at this moment four cases in young girls, who were sent to the surgical wards and operated on as emergency cases of acute appendicitis. When the trouble is on the right side and the abdomen is rigid, the differential diagnosis is sometimes very difficult.

DR. J. RIDDLE GOFFE.—A thought that suggests itself in the way of discussion is in connection with the removal of the second ovary in the last case reported. This patient was only 26 years old, and from Dr. Brothers' description of the condition and the macroscopic appearance of the ovary, I see no satisfactory reason for its removal.

DR. JAMES N. WEST.—I happened to be present at the operation of Dr. Brothers, and can assure Dr. Goffe that the right ovary was far from normal. It was three or four times the size of the normal ovary, and in view of the fact that women so often have an ovarian cyst develop from an apparently healthy ovary when there is a cyst on the opposite side, I think the removal of the right ovary in this case was a wise thing to do, especially in view of its abnormal size.

DR. HIRAM N. VINEBERG.—During my term of service at Mt. Sinai Hospital a year ago last summer, two patients were admitted to the medical ward with the diagnosis of acute obstruction of the bowels. The house physician, who had already served his term in the gynecological ward, recognized them both as typical cases of ovarian cyst with twisted pedicle, and had them transferred to the proper service, where they were operated upon by me. Acute obstruction of the bowels seems to be quite a common symptom in this condition. A twist of the pedicle of ovarian cysts is not an uncommon occurrence, and is almost always present when the cyst is large and rises out of the pelvic cavity. The tumor then usually takes a position opposite to the side to which it belonged. So that a large cyst of the left ovary will have its probable position situated in the right side of the abdomen. A twist of this kind, that is, of 360 degrees or less, seldom gives rise to any acute symptoms. It is only when the pedicle makes several complete twists that acute symptoms manifest themselves.

DR. ARTHUR M. JACOBUS.—I have seen a number of cases of ovarian cysts with twisted pedicle. Two were large dermoid cysts of the ovary; one of these a prominent surgeon had diagnosed as malignant disease of either the caput coli or of the omentum, while the other was diagnosed as pregnancy by another surgeon. I saw both of these cases before the twist in the pedicle had occurred, as well as afterwards, and the twisting of the pedicle was followed by a distinct diminution in the tension of the tumor in each case. Both were in single women, and one gave a history of amenorrhea. The tumors were central with fluid, and a solid body simulating pregnancy of about five months.

In a few days the tension of the cysts lessened very much and, taking all things into consideration, we made the diagnosis of dermoid cyst of the ovary with twisted pedicle, and on operation this proved to be right. The unusual softening of the cyst which follows a twisting of the pedicle is certainly diagnostic of the latter condition.

DR. EDWIN B. CRAGIN.—I wish to call attention to the likelihood of the pedicle assuming a twist after delivery in a case where such a tumor complicates pregnancy. We have had one or two cases at the Sloane Maternity where, after the completion of pregnancy, as the uterus involuted and the cyst had more room, a twist of the pedicle occurred.

ECLAMPSIA IN TWIN CHILDREN.

DR. BRETTAUER reported the case of a mother, 40 years old, who had had three children. All were difficult labors, on account of a narrow pelvis. Pregnancy and puerperium were normal. On September 29th she was about at term, and was suddenly, without any premonitory symptoms, taken sick with a severe eclamptic seizure. Two hours after, a second seizure took place, lasting for several minutes and accompanied by intense cyanosis. When seen shortly after, she presented a picture of deep intoxication. She was unconscious, deeply cyanosed, with rigid, high tension pulse of 140, and a normal temperature. The bladder held a little urine, which was solid on boiling, and contained many granular and hyaline casts. The abdomen was large and irregularly shaped. The fetal heart sounds could be best heard about the umbilicus. The configuration suggested a twin pregnancy, though no second heart sounds could be heard, and neither abdominally nor bimanually could any sign of twin pregnancy be detected. The patient was undoubtedly in labor, the os readily admitting three fingers. Under chloroform narcosis, by means of manual dilatation and forceps the patient was easily delivered of an asphyxiated child, which was in L. O. A. position. A few minutes later a second child, in breech presentation and separate sac, was easily delivered. It was also very much asphyxiated. There was considerable hemorrhage before the single, but very large, placenta was delivered. The children, after long and vigorous efforts, were resuscitated, though the breathing of the second child was always superficial. Six hours after delivery the first child, which had been breathing very well, had a severe and typical eclamptic seizure, which was followed during the next four hours by four others, typical, but less severe. During the intervals the child breathed very well, and showed no other symptoms. It took nourishment administered with a dropper twenty-four hours after birth without vomiting. The second child, from the moment of birth, had to be constantly watched, as its respiration was very superficial and would cease at times altogether, so that artificial respiration had to be resorted to. Eight hours after delivery a typical, but mild, convulsion oc-

curred, which was followed by nine others at intervals of from fifteen to thirty minutes, when it expired.

The mother, however, had no more convulsions. Three days elapsed before consciousness returned, and the urinary analysis showed a marked improvement. The child was put to the breast, and both mother and child are convalescing satisfactorily.

This case was reported in this incomplete manner simply to elicit discussion among the members of the Society as to the frequency of the occurrence of eclampsia in the newly-born of eclamptic mothers, as this was the first such case he had experienced. Though the skull of the second baby was not opened, he did not hesitate to exclude the possibility of intra-cranial hemorrhage as the cause of the convulsions.

DR. CRAGIN.—I think that in every large maternity hospital we occasionally see these cases of eclampsia in the child, both ante-partum and post-partum. Last year at the Sloane one of the children had an eclamptic seizure before delivery, as shown by the contractions of the child, which was still-born, and I can recall at least two others in which the seizures occurred subsequently. They may occur in both mother and child, and may be both ante-partum and post-partum.

DR. GEORGE L. BRODHEAD.—I am inclined to agree with Dr. Cragin. Dr. Brettauer states that at the autopsy the skull was not opened, but even if it had been, I doubt whether any light would have been thrown on the case, for the examination would probably have disclosed an extensive, intense congestion of the brain and meninges, a lesion common alike to asphyxia and death from convulsions. Certainly, these children were susceptible to the toxic influence of the blood of the mother, and the probabilities are that in the case reported by Dr. Brettauer the convulsions in the infants were of eclamptic origin, although they may have resulted from asphyxiation.

DR. WILLIAM S. STONE.—I had a case last year which may be of some interest in this connection. The patient was a single girl, suffering from eclampsia, who was delivered of a child that breathed only once or twice. The autopsy showed a very marked hemorrhage in the peritoneal cavity, which had come from a rupture of the liver. Sections of the liver showed typical areas of necrosis, which we are beginning to consider as the important lesions of eclampsia. I would like to further corroborate what Dr. Cragin said as to the frequency of symptoms and lesions in children born of eclamptic mothers. I have seen two or three examples of eclampsia in infants other than the one I have just mentioned, and one or two cases in which convulsions did not occur, but in which the children were markedly jaundiced.

DR. J. CLIFTON EDGAR.—In some of these cases the mothers may not be distinctly eclamptic, but may show symptoms of toxemia. I recall one case where the child had repeated convulsions. Dr. Jacobi saw that case with me, and was inclined to think there was a cerebral hemorrhage. Contrary to our expectations, the

child made a complete recovery, and if a hemorrhage did occur, it certainly gave rise to no ocular symptoms and left no after-effects on the musculature of the patient. Last winter I saw a case in which I could only explain the symptoms on the ground that they were due to a toxemia. The child was apparently well when born, but forty-eight hours later it went into a condition of coma from which it could not be roused. The pupils were equal, pulse 84, respirations 22. We thought we had to do with a cerebral hemorrhage, but the final diagnosis was toxemia. At all events, after repeated irrigations of the colon the symptoms cleared up and the child made a complete recovery. In neither of the above cases were the mothers eclamptic. One of them had been careless as to her diet during pregnancy, and the urine contained albumin. In the other case there was marked jaundice and headaches.

DR. J. RIDDLE GOFFE reported a case of

IMPERFORATE HYMEN.

Cases of imperforate hymen are not common. I have seen two only. The first was that of a colored girl, 19 years of age, who presented herself at my clinic a number of years ago. I cannot find the record of the case, but the feature of it that made the most marked impression on my mind is that the uterus, as well as the vagina, participated in the distention necessary to accommodate the repeated discharge of menstrual blood, and that this distention involved the cornua of the uterus to such an extent that, by inverting the uterus, which was a thin, flabby bag, and bringing the fundus down to the vulva, the openings of the Fallopian tubes could be distinctly seen. Indeed, the tubes were patulous for some little distance.

The history of the case I now report is as follows: Miss T. P., born and raised in New York City, 21 years of age, single. She had never menstruated, and was always well and strong, with the exception of periodic pain and discomfort. When about thirteen years of age, she began to suffer from attacks of pain in the lower part of the abdomen and in the back, also shooting pains extending down the legs. The attacks occurred every four to six weeks, and continued about one week. They were accompanied by dizziness and spots floating before the eyes. The pain at times was agonizing. This experience continued three or four years, becoming more or less irregular and less severe. For the past four years the pain has been noticeably less, although each month the patient suffers from malaise and headache, with dark rings under her eyes. On physical examination, a large, well-developed girl presented, with full bust and well-formed breasts. The abdomen protruded unnaturally above the symphysis, and a rounded mass pouted out between the labia minora. This proved to be an imperforate hymen, bulging out from pressure of liquid contents behind it. This tumor was compressible and fluctuating. Rectal touch revealed the vagina distended laterally to the full capacity

of the pelvis, and reaching nearly to the promontory of the sacrum. An irregular summit of the tumor represented the uterus.

Operation at the Polyclinic Hospital, October 6, 1904. Without anesthesia, and with the patient in the dorsal gynecological position and straining down to put the hymen intensely on the stretch, I plunged a sharp knife through it at one side, and in withdrawing the knife cut laterally across the entire extent of the hymen. The tissue was tough, almost bloodless, and the procedure was nearly painless. About one quart of liquid blood spurted out violently. It was grumous, dark in color, but entirely free from odor. Digital examination discovered a large, overdistended vagina, at the end of which the cervix uteri was dilated almost to the diameter of the vagina, and formed a sort of wide ring or band around its circumference. The arbor vitæ formation of the interior of the cervix could be felt, compressed and flattened out, and beyond the cervix the uterine body was dilated to the thinness of the vagina, like a flabby bag. The entire cavity was carefully explored, but no entrance could be made into the Fallopian tube. The cavity was irrigated with saline solution, with bichloride, and again with saline, and the patient dismissed with instructions to keep the external parts scrupulously clean, but to take no douches. The patient was employed in a box factory, and anxious to lose no time. She was, therefore, allowed to return to her work.

We have here in both cases a condition not only of hemato-colpos, but also of hematometra.

These cases are always interesting, and suggest the problems that arise in the study of the formation of the vagina and the hymeneal membrane. Ballantyne (*Text Book of Gynecology*, Reed) says: "It is extremely probable that many of the cases described as instances of imperforate hymen are really examples of atresia of the lower end of the vagina, for in some of the records the presence of a hymeneal membrane hidden by the projecting vaginal sac is referred to." The toughness of the membrane that I incised was suggestive of this condition, but no duplicate membrane or any remnant of it could be discovered. I therefore record it as a genuine case of atresia hymenalis.

This case suggests a modification of the usual definition of menstruation. Menstruation is usually defined as a periodic bloody discharge from the vagina. This patient seems to have gone through each month all of the essential factors in the function of menstruation, with the one exception that the effete or useless products of menstruation were not eliminated from the body. In other words, shall we define menstruation as the expulsion from the body of the useless products of a function that occurs every month, or should the thought be directed to what goes on in the uterus and Fallopian tubes. Howard Kelly, in commenting on this condition of imperforate hymen, says that the apparent amenorrhea which characterizes it might be called an

amenorrhea paradoxa, as the menstrual function continues normally, while the secretions accumulate above the stricture.

DR. EUGENE C. SAVIDGE.—I am led to ask if the capacity of the uterus and vagina was great enough to accommodate all the output of the repeated menstruations; also whether the patient gave a history of nose bleeds? I have had a similar case in which the patient bled very regularly every month by the nose. In this case the atresia has been relieved, but the uterus is very small. The patient still bleeds by the nose, but does not menstruate. Such cases seem to answer Dr. Goffe's very interesting question, viz.: Is menstruation the relief of a systemic or a local condition?

DR. VINEBERG.—Two or three years ago I saw a patient with imperforate hymen. She was 20 years of age, and as she had never menstruated, her mother was somewhat anxious about her, although she had no symptoms. On abdominal examination, I could make out two cystic tumors, resembling two large tubal masses, above the uterus. On cutting through the hymen, which was very much thickened, these tumors, which I supposed to be tubal, proved to be simply the distended vagina bulging in front and behind the uterus. The uterus itself was apparently normal. One peculiarity of this case for which I could offer no explanation was that one part of the vaginal wall was eroded and discolored, and it was some time before this discoloration disappeared. The girl made a rapid recovery after excising the hymen and suturing the mucous membrane to the skin, and has since married. I do not know whether she has become pregnant or not, as I lost sight of her.

FURTHER RESULTS IN THE USE OF A MODIFIED CHAMPETIER DE RIBES BALLOON. BY DR. JAMES D. VOORHEES.

DR. BRODHEAD.—We have all enjoyed hearing Dr. Voorhees' paper, and the very thorough way in which the subject has been handled leaves very little for us to say. During the past four or five years I have made extensive use of the modified Champetier de Ribes balloon, and I am just as much of an enthusiast regarding it as is Dr. Voorhees. Practically all the cases in which the bags were used have shown good results. In those cases in which they were used for the induction of labor the result was satisfactory, with the exception of one case, where it was necessary to insert a bougie after the largest-sized bag had been used, labor not yet being induced. In dry labor there is no question of their value. Although no mention was made of a possible change in the position of the fetal head caused by the introduction of the bag, I would like to ask Dr. Voorhees if he has ever seen that occur? Personally, I have never observed it. The reader of the paper said that in certain cases of eclampsia he would rather use the bag than accouchement forcé.

There can be no question that where the cervix is unyielding better results can be obtained by the introduction of a bag, for by

¹See original article, page 9.

the use of forcible dilatation the element of shock is added to the already critical condition of the patient and, therefore, the patient's chances are better with the bag and active medical treatment than by accouchement forcé.

DR. EDGAR.—Those of us who had struggled with Barnes' bags and McLean's modification of them, and often had difficulty in keeping them in place, welcomed with joy the introduction of the original Champetier de Ribes balloon, but it was not very long before we found that the large bag was objectionable the same as some of Barnes' bags, because of its size. It was subsequently modified by one of the assistants in the Tarnier Pavilion, who acted on the idea that the original bag was entirely too large and that it might displace the fetal head, an accident, by the way, which did happen in one of my cases. I employed this modified bag for a number of years, with very satisfactory results. It was first put on the market, I believe, in 1892, and was largely used in Paris, and some were sent over to England. The original bag of de Ribes is practically out of use. Since the modification was introduced in Paris and those used at the Sloane Maternity, we have a much better bag for the purpose for which they were intended. I have used it for years with great satisfaction, and with me it has largely taken the place of the bougies, although I still use the latter in some cases to stimulate the pains, and in some instances I supplement the use of the bags with the bougie, as Dr. Cragin does, although I did not know until to-night that that was his practice. I have employed the bags in the marginal type of placenta previa, but I should hesitate to do so in the central type. In the latter variety I would much prefer to pack the cervical canal and vagina with sterile gauze and allow it to remain until the cervix has softened sufficiently to do a manual dilatation. About a year ago, several cases of complete rupture of the uterus were reported, due to too vigorous bimanual dilatation of the cervix; but I do not believe such an accident will occur if the cervix is first brought into proper condition by packing.

DR. FRANKLIN A. DORMAN.—I can indorse practically everything Dr. Voorhees has said. In my lectures to post-graduate students the three questions that are most often asked by men who understand obstetrics fairly well and who have had a great deal of practical experience are, first, What do you do for a rigid cervix? second, what do you do for eclampsia? third, what do you do for placenta previa? My answer to all three of these questions brings up the subject of these bags, and its description and the method of its introduction is always received with enthusiasm by the students, as they readily see the practical side of the subject. In dealing with placenta previa of the central type, I believe that the use of these bags is the most conservative method—with one exception, perhaps, of Cesarean section—because with them we can dilate the cervix with the least degree of violence. I do not agree with Dr. Voorhees, however, in his statement that the largest bag possible should be introduced

at once. I would rather favor the use of a small bag, gradually substituting a larger size. In this way the placenta is exposed more gradually, and the danger of hemorrhage minimized until delivery becomes possible. I have seen cases where the use of the bag has displaced the fetal head, and this objection to it has already been referred to. In some cases where too large a bag was used, I have seen a mal-presentation result, and in some instances the membranes have ruptured and the cord has washed down ahead of the fetus. I have also seen bags introduced unskillfully into a long cervical canal, and these during distention cause rupture of the cervix. These accidents should not occur if the bags are introduced with care, and they should weigh very little against their use.

DR. ROBERT A. MURRAY.—Anyone who has had a large experience with cases of placenta previa knows that one of the most important features is the softening of the cervix. You want to get that cervix soft, so that it can be dilated. My treatment of these cases has been similar to that outlined by Dr. Edgar. I tampon the cervix with gauze, and after awhile it will become soft and dilatable. If further dilatation is necessary, I insert a Barnes bag or a Champetier de Ribes balloon; the latter in two cases where I have employed it has not proved as satisfactory as the former. I have had fifteen or sixteen cases of complete placenta previa, two of them very desperate. In both of these I tamponed the cervix and allowed the tampon to remain for a number of hours, in the meantime giving stimulants and infusions, until I was able to effect delivery. Out of those sixteen cases twelve children were saved. In the presence of hemorrhage, most of us feel that we ought to do something in the way of emptying the uterus. If we remember that the first effect of hemorrhage is to quickly change the blood pressure, and if we remember that we can change it still more, as I have done, by temporarily cutting off the circulation from the four extremities and by elevating the patient and using saline infusions, there will be ample time for the patient to recover, and generally, after such a severe bleeding, the cervix will rapidly soften. The marginal type of placenta previa I do not regard nearly as dangerous as the central, and I think the two forms call for entirely different methods of treatment.

DR. WILLIAM S. STONE.—I think this paper of Dr. Voorhees' is an absolute demonstration of the fact that obstetrics is a scientific branch of medicine which everybody cannot practice equally well. It recalls to my mind one of the objections raised by Dr. Cragin to primary trachelorrhaphy, that he was not quite prepared to speak in favor of that procedure, because he was a little bit afraid to teach it, although he thought that men who were skilled in pelvic surgery should do it. It occurred to me this evening that possibly the insertion of these bags might also be a procedure in obstetrics that we might be afraid to teach. Dr. Voorhees passed rather lightly over the ease with which

the bags were introduced. I have never had any particular difficulty in the introduction of the bags, nor, do I believe, has anyone who has used them to any extent, but I can appreciate that an unskilled man might have considerable difficulty. While he might be able to introduce them, it would be at considerable risk of tearing the cervix, especially in primiparæ. I do not bring this up as an objection to the use of the bags, but only regard it as another demonstration of the fact that special skill is required to practice scientific obstetrics.

DR VOORHEES.—In reply to Dr. Brodhead's question as to whether there was any change in the position of the presenting part, in any of the cases reported, I would say that this occurred in a few instances. There is no doubt that, now and then, if a large-sized bag is introduced and inflated too quickly the head is displaced. In certain cases where haste is indicated and you have not the bags at your command, I do not know of anything better than tightly tamponing the vagina, as mentioned by Dr. Edgar; and under those circumstances that measure is certainly indicated in dealing temporarily with a central placenta previa. I have now and then seen a prolapse of the cord following the introduction of the bag, but this accident is less likely to occur if the cases are carefully managed. I agree with Dr. Murray that we should not always depend upon the amount of dilatation of the cervix, but rather its softness, in determining whether to go in and deliver. In marginal placenta previa we should not be very much alarmed because sometimes, by merely rupturing the membrane, we can control the hemorrhage at the most by doing a forceps, and so avoiding the danger of version until delivery can be effected. I agree with Dr. Stone that those who are unskillful may have difficulty in inserting the bags.

In answer to Dr. Dorman's criticism in regard to introducing the largest-size bag at the onset, I would say that this is a general rule. If in placenta previa we insert small ones, we are tempted when they come through the cervix to do the version before the dilatation is great enough, *i. e.*, before the cervix is very soft.

TRANSACTIONS OF THE CHICAGO GYNECOLOGICAL SOCIETY.

Meeting of November 18, 1904.

The President, J. CLARENCE WEBSTER, M.D., in the Chair.

DR. HENRY F. LEWIS presented specimens of three monstrosities.¹

DR. WILLIAM HESSERT read a paper (by invitation) entitled

ACCIDENTAL PERFORATION OF THE UTERUS DURING CURETTAGE.²

DR. CHARLES B. REED.—We are indebted to Dr. Hessert for this timely paper. It has been a long time since there have appeared any accounts (in English) of perforations of the uterus. As would naturally be supposed from the origin of the curette with Recamier, in France, the literature is mostly of French origin. The most recent work on this subject, I believe, has been published by Rebreyaud in 1901 and Miguel in 1902, in his Thesis of Paris. About 1870, observations were reported by Hoening, Mayer, Martin and Buckhardt, reporting a great number of cases of perforation of the uterus in which it was definitely established that the uterine wall was perforated, but no consequence of an evil character followed. These cases received quite universal publication, and were used to antagonize statements that the curette was a dangerous instrument to use in the uterus; nevertheless, uterine tissue, especially post-partum and post-abortion, is dangerous tissue on which to use a steel curette, and on account of its softness the instrument is apt to go through the uterine wall easily. On that account it seems more desirable in all cases of abortion and of post-partum work, where curetting seems to be required, that the finger, carefully protected, should be used as much as possible. The absence of the typical scraping sound, showing that the instrument has reached the uterine musculature in these instances, is marked. *Le Cri Uterin*, as the French call it, is not present, and the usual warning that we have reached the depth of the endometrium fails us.

In regard to the ease with which this accident can happen, Liebmman of Triesle, made some interesting experiments on one hundred cases in which the uterus was removed post-mortem, and in sixty-five cases the instrument passed through the uterus with extreme ease. In twenty-four cases, eleven of which were normal, and the rest of the uteri somewhat hypertrophied, some difficulty was encountered in passing the instrument through the

¹Paper to appear in February number.

²See original article, page 16.

uterus. But in sixty-five per cent. of the cases the instrument was passed with extreme ease aside from those cases which Dr. Hessert has already mentioned, so that we cannot take too much pains and care in using a sharp curette in the uterus either post-partum or post-abortion. I believe it is a dangerous instrument to use in those cases.

DR. RUDOLPH W. HOLMES.—Dr. Hessert has presented a most timely paper on instrumental perforation of the uterus, which necessarily includes gynecic and obstetric injuries; and it is the latter class I believe which furnishes us with the majority of penetrating wounds of the uterine wall. The uterine changes during pregnancy and the puerperium are such as to make the accident more liable than at other times—the particular predispositions are the increased size of the uterus, making the uterine wall less clearly defined, and second that the muscular layer is less resistant, softened, and thinned; to these may be added the fact that the unskilled hand is more frequently concerned in intra-uterine instrumentation during pregnancy, than in the unimpregnated state. But we must not lose sight of the fact that pathologic changes in the uterus may invite this untoward complication in the hands of the most skilled. It has been my fortune to see two or three instrumental perforations during curettage for endometritis while serving as interne—the operator was an adept at the operation: once, in cleaning out an abortion I strongly suspect that the instrument perforated the uterus—the uterus was packed with gauze, and the woman did well, as did the others.

I have the privilege of reporting the following case for Dr. A. J. Ochsner, under whose charge she came at the Augustana Hospital: The woman, 36 years of age, entered the hospital August 27th, at 4 P.M., with this history: About noon of the day of her admission she was curetted by a physician, who presumably was the one who had induced a criminal abortion the week previous. In the course of the operation the doctor pulled down a glistening membrane which he took to be umbilical cord; he pulled a little more, and then came to the conclusion it was too large for the cord of such an early pregnancy; in his fright he sent for a brother practitioner who pulled down more to investigate the nature of the tissue; he finally decided it was intestine. Then the woman was sent to the hospital, and on her arrival she was found to be in shock. At once she was placed on the table, and Dr. Ochsner proceeded to operate. There was a long loop of intestine in the vagina, which had prolapsed between the woman's legs at the patient's home, and which had been replaced in the vagina by the physicians, being retained there by a small tampon; this loop was later found to measure seven feet and ten inches. The treatment was as follows: Laparotomy, resection of the bowel, and end-to-end anastomosis done with Harrington segmental ring; the resected portion of the ileum was drawn through the perforation, and supra-vaginal hysterectomy done on account

of the sepsis. The mesentery had been stripped off a large portion of the prolapsed bowel; there was little bleeding from the opened mesenteric vessels; the mesentery was ligated with a running catgut. The woman made an uneventful recovery. She was kept on exclusive rectal feeding for two weeks, then she was given beef tea for a few days, then broths, and later milk. The wound in the uterine wall was found in the posterior wall just above the internal os.

DR. CHARLES S. BACON.—These cases are interesting from a medico-legal standpoint, and it might be well to mention the principles that determine the decisions of the courts. The courts hold that a physician should have the knowledge and skill possessed by the average practitioner of his community and of his time, and it is not required that any physician doing an operation that is frequently done by others than specialists shall have exceptional skill. Applying this principle to a case of perforation of the uterus following curettage, I will say that curettage is acknowledged to be an operation done by practitioners, not necessarily by the greatest specialists. It is only necessary to determine, first, that the operation itself is needed; second, that the average amount of ordinary skill was exercised in the operation; third, that the case was not neglected afterward. In the management of these cases it is always important to make certain that the operation was necessary. It has been decided by the courts that it is not possible to avoid perforation, in many cases, and the courts will not hold that a lack of skill exists because a perforation of the uterus has been caused.

One of the most important questions that comes up is whether it is possible always to recognize a perforation of the uterus after it has been produced. I think it can and should be held that a perforation can occur and not be recognized by the most skillful physician. In the case that was reported by Dr. Herzog and myself it is probable that the curette did not pass through the uterus. The operator pulled out the necrosed tissue and left an opening. It is quite possible that a true perforation may occur without penetration of the curette.

There is one thing in regard to the prevention of perforation that, I think, might well be emphasized, and that is, that the instrument should be adapted to the purpose; that an instrument with a stiff shank is more dangerous than one with a flexible shank. I think that is a point in the use of the curette that is not properly appreciated.

DR. THOMAS J. WATKINS.—I wish to mention a case which I reported before this Society four years ago in which a large opening in the Fallopian tube was mistaken for a perforation of the uterus. The patient was sent to the hospital under my care, and on exploring the uterus there was a question as to whether there was really a perforation of the uterus, or whether the instrument had entered the Fallopian tube. The curette in this case was supposed to have passed through the uterus. The physi-

cian stated that the curette had passed in at least six or seven inches. In order to determine the exact condition the abdomen was opened by an incision through the anterior fornix, and it was demonstrated that the instrument had entered the Fallopian tube and had not perforated the uterus or Fallopian tube.

DR. FRANK T. ANDREWS.—These cases are more common than we have formerly supposed. I myself have seen three cases of perforation of the uterus. One of them I saw in consultation in a hovel on Indiana Street, the patient being in collapse. The attending physician said that the patient herself had passed a wooden meat skewer into the uterus with the intent of producing an abortion, and the physician in attempting to deliver the abortion had pulled down a considerable quantity of bowel into the vagina and had lacerated the bowel to a considerable extent, and shortly after I saw the patient she died. She died within an hour. Nothing could be done for her.

In a second case the patient was brought into the hospital, in which a Goodell dilator had been used to dilate, not perforating the uterus, but tearing the uterus into the broad ligament, and the sound, as was proved by laparotomy, passed alongside of the uterus and perforated the top of the broad ligament just behind the Fallopian tube. In this case I stitched up the peritoneum, put in a slender vaginal drain into the rent in the broad ligament, and the patient made a complete recovery.

In a third case the patient was brought into the hospital, the physician stating that he was the second attendant in the case; that he was called in after another physician had produced an abortion, and had attempted to pass a uterine sound, which was sucked up, so that it slipped away from his hand, and he was fearful he was going to lose it. I did not pay much attention to this explanation. At any rate, he sent the woman to the hospital. I made an incision in the abdomen an inch or more in length, closed the perforation which I found in the top of the uterus, and the woman made an uneventful recovery.

DR. CARL WAGNER.—In regard to such cases where a doubt exists as to whether the uterus has been perforated or not, I like to take exception to Abrams, who teaches to laparotomize in each case. Because the curette may pass into the tube only and thus simulate perforation, or as Bieder proved in his experiments the curette can even traverse the tube and enter the peritoneal cavity. In some cases the uterus may suddenly be converted into a flabby bag through a sudden paralysis of its muscular substance, and in this way through elongation allow the curette to enter to a perplexing depth. Furthermore, the application of large ice-bags upon the abdomen in perforated uteri has given very frequently very satisfactory results, as the literature of late proves abundantly.

DR. EFFIE L. LOBDELL.—In my own practice I recall one, a puerperal case, which developed a temperature about the fourth day. The family becoming alarmed called in a near-by physician,

who promptly proceeded to give an intra-uterine douche. I happened in while he was attempting to introduce the Kelly intra-uterine instrument through a vaginal speculum. After considerable manipulation in introducing, he turned the inserted portion so that the tip presented anteriorly, causing a perforation directly into the bladder, resulting in a permanent vesico-uterine fistula.

The second case was one in which I had been called in consultation. My diagnosis was retroversion with pelvic abscess. The physician believed the condition to be one of retained decidua, as there was a history of abortion two or three months prior, and to confirm his diagnosis introduced a small curette to explore. My hand was placed lightly over the lower abdomen, when suddenly I felt the tip of the curette with only the abdominal wall between it and my hand. It was immediately withdrawn. A post-cervical incision was made, an immense abscess emptied and drained and at no time was there complication from the accident of perforation.

I would like to call attention to the fact that in both cases there was retroversion of the uterus, which was not recognized nor regarded by the physician previous to his manipulations.

DR. WM. M. THOMPSON read a paper on

DERMOID CYSTS OF THE OVARY COMPLICATING LABOR.¹

DR. JUNIUS C. HOAG.—I was much interested in the report of this case, because it is similar to one which I reported to this Society a number of years ago. Dr. Thompson, in his case, had the advantage of dealing with a small fetus, rendering palpation an easy matter. When I reported my case, I remember that Dr. Bacon asked the question why it was we did not drain the tumor at the time, rather than do a Cesarean section, as was done, and in the discussion I recall I forgot to answer his query, and although ten years have elapsed, I can now answer his question. We did not drain the tumor because we could not make out definitely what the tumor really was. There were a variety of opinions expressed regarding the tumor. Three men examined the patient. One thought there was a monster with two heads; another thought there was a bony growth attached to the pelvic wall; and a third, I think, expressed no opinion. What we found when I made the Cesarean section was a well-developed child and a large dermoid cyst. The patient made a good recovery, and about three months later she returned to the hospital and Dr. Watkins, who was also present at the first operation, removed the tumor through the vagina. The operation at that time was not difficult. At the time the woman was in labor I think it would not have been judicious to have opened the tumor; at least, it did not appear to be so at the time, because we could not decide what the tumor was or outline it well. The tumor was quite large, and what rendered the diagnosis particularly difficult was the fact that in the sac of the tumor

¹See original article, page 87.

there was a large flat bone, and in the bone were some soft places, defects so to say in the bone, covered only by the membrane that formed the sac of the tumor, so that the feeling was that of another head. The soft part of the bone appeared like a fontanelle in a child's head. This piece of bone was about three inches in diameter, and contained on the inner surface a number of teeth.

DR. C. S. BACON.—I do not criticize the management of this case as it was undoubtedly the proper management, but I would like to ask what methods were taken to replace the tumor. I have seen three cases of ovarian tumor complicating labor, and in all of them it was possible to replace the tumor. In one case the tumor was ruptured during the effort at replacement, and the other two were replaced without rupture of the tumor. It was necessary in all these cases to put the patient in the knee-chest position and introduce the whole hand into the vagina and make considerable effort in the replacement. Ordinarily in such conditions as were present in this case I should suppose it was desirable to use every possible method to replace the tumor before opening or removing it.

DR. HENRY F. LEWIS.—In noticing the literature for the past five or six years on this subject, it appears that there is a growing tendency not to use obstetrical treatment in these cases, but to come more and more to surgical treatment. There are a great many excellent authorities who recommend Cesarean section as the proper treatment for all these cases, where we make a diagnosis of dermoid complicating labor. A few years after Dr. Hoag reported this case, I reported before the Chicago Medical Society, a case of dermoid cyst complicating labor, in which, because I had not arrived at the state of knowledge that is now possessed by us, I replaced the tumor manually, with recovery of the mother and child. The tumor was proved to be a dermoid afterwards by Dr. Henrotin, who, a year or so later, removed it.

DR. THOMPSON.—Dr. Bacon's remark about replacement of the tumor is timely; but as this woman had been in labor so long and was exhausted, I did not continue my attempts very long to replace the tumor. I thought it was cystic; further than that I could not tell. It bulged the recto-vaginal wall so much that I could not see the cervix; it took up all the space. It was comparatively easy to make an incision and draw it into the wound, and the fact that the patient was exhausted, and the surroundings were not favorable for opening the abdomen, I made the operation I did. I believe from the cases I have read about and from the literature I have seen, that Cesarean section is the proper operation when the patient is seen in time.

RUDOLPH W. HOLMES, M.D.,
Editor of the Society.

TRANSACTIONS OF THE WOMAN'S HOSPITAL SOCIETY.

Meeting of October 25, 1904.

The President, DR. J. RIDDLE GOFFE, in the Chair.

DR. CARMALT reported a case of

COMPLICATED UTERINE FIBROMYOMA — OPERATION — RECOVERY— PREGNANCY.

This case is reported as illustrating the difficulties and uncertainties of pregnancy complicating uterine fibromyomata, the value of myomectomy even in cases with very large tumors and the complications of that operation. The case has been observed by me over six years, and therefore the history is rather complete.

Mrs. C. R. P., wife of a physician, 32 years old, 5 feet 9 inches; weight, now, 196 lbs.; married twice; American, of New England and New York Dutch ancestry, all long-lived somewhat neurotic, red hair, blond coloring; family and personal history negative save for present complaint.

In December, 1899, I curetted her for endometritis following an incomplete abortion at the third month, the second she had had. The anterior wall of the cervix was much thickened and the uterine cavity four inches deep. In 1900 she apparently had a third miscarriage, and the uterus was much larger, giving evidence of a tumor in the lower segment. In November of 1901 her husband and I decided that she must be pregnant, from the rapid increase in the abdominal tumor, the enlargement of the breasts, slight nausea and a violaceous tint to the vagina, despite a menorrhagia still continuing. She was put to bed at the time of menstruation and given opiates, but did not really become pregnant until May, 1902. By that time it was apparent that there was a large, rapidly-growing fibromyoma, or myomata, in the anterior wall of the cervix and lower uterine segment pressing upon the bladder as well as filling the upper vagina so completely that the cervix could not be reached.

The patient declined to have labor induced, and we decided to do Cesarean section whenever labor commenced, the period of pregnancy being very doubtful. Preparations were made and labor commenced, but before the arrival of assistants the uterine contractions lifted the tumor out of the pelvis and drove the child down to the perineum. Although this took place in less than half an hour, the length of the vagina was so great that the child was asphyxiated before I delivered it. Faithful artificial respiration, hot and cold water and stimulation failed to restore the

breathing. The placenta was retained behind the tumor and I had to remove the placenta manually. Her convalescence was uninterrupted and the tumor (apparently the size of a child's head) shrank to less in size than a small egg.

During the following summer she had several attacks of menorrhagia, possibly abortions, and the tumor again grew to a greater size than ever before. It filled the vault of the vagina and apparently mechanically interfered with conception. Her apparent sterility began to prey upon the patient's mind. She declined to consider hysterectomy at all, and knowing the risks, decided upon an exploratory celiotomy with probable myomectomy.

October 25, 1903.—Gas and ether. Ordinary preparations. Assistants, Drs. A. V. S. Lambert and Charlton Flint. Incision from above umbilicus to pubis. Tumor occupied anterior wall of uterus, encroaching upon bladder below and extending into left broad ligament. There was no pedicle. An attempt to split the peritoneum over the mass met with such furious bleeding it was discontinued. Around the base of the tumor sutures, including the peritoneum and large vesse beneath, were passed and tied. More than fifty of these were used, and the peritoneum toward the tumor was incised, bleeding points tied while the mass dissected free from bladder below was removed, together with the anterior wall of the uterus. The mucous membrane of this anterior wall was not entirely removed. The raw surface thus made was brought together with two tiers of mattress sutures as would be the rent of a Cesarean section, and when the peritoneum was closed the wound looked like that of a Cesarean section with an incision extending down on to the peritoneum behind the bladder. The abdominal wound was closed in tiers and the patient put to bed. Operation, two hours. General condition rather poor; pulse, 120. She had been infused just before close of operation. Loss of blood considerable.

Her convalescence was uninterrupted until the 28th day. Primary union in wound. This day she was allowed to sit up at my suggestion. It was the day her menstruation was due. That night she had a temperature of 104° and great pain on the left side over region of the left ovary, apparently. No mass could be felt. Two days later that left thigh began to swell and a diagnosis of left iliac phlebitis was made. Four weeks later the same condition developed in the opposite leg and side, and alternately the kidneys apparently ceased secreting; the edema extended as high as the axilla. The edema subsided, and in six weeks the patient was well. In the next few weeks the patient became pregnant and I delivered her on September 15, 1904, of a $10\frac{1}{4}$ -lb. boy after a labor of two hours all told. In my anxiety to get a live child I permitted the head to tear the perineum, which was immediately repaired, and healed well, save for continued swelling of legs from former phlebitis. She is nursing her baby without difficulty.

Albanus and Sonnenburg hold that phlebitis follows in 4 to 5 per cent. of all operations upon the peritoneum, but state that 20 per cent. of Albanus' cases followed myomectomy and ovarian cyst operations. Burkhard, 12 emboli in 236 myomectomies, 24 phlebitis. In this and one other case the fact that the phlebitis was synchronous with a missed menstrual epoch was significant.

The fact that the tumors very rarely interfere with actual delivery I have seen in two more instances. The phlebitis was treated by early usage of the limbs. It seems to me that the result is better than by compression and bandages. The shrinkage of the tumors after delivery I have seen in five instances that I recall at present. Tumor, fibromyomata, 8 by 6 inches; weight, 6½ lbs.; very vascular; piece of peritoneum attached.

REFERENCES.

Albanus, G.: *Thrombosen und Embolien nach Laparotoionen*. *Beitrage z. Klinische Chirurgie*, Oct., 1903, Bd. xl, H. 2, p. 311. 53 cases: 18 septic; 26 after myomectomy and ovarian cyst.

Burkhard: *Ueber Thrombose und Emboli nach myomoperation* *Zeitschr. f. Geburtsh. und Gynäkol.*, Bd. xlv, H. 1, 1900.

Gebele: *Ueber Lungenaffectionen nach Bauchoperationen*. *Beitrage z. Klinische Chirurgie*, Aug., 1904, Bd. xliii, H. 2, p. 251. Many references.

DISCUSSION BY

DR. P. F. CHAMBERS.—I wish to report a case upon whom I operated yesterday, similar to one upon whom I operated several years ago, and both demonstrating the great difficulty of always differentiating between a fibroid uterus and a pregnancy. In both of my cases there had been a cessation of the period for three months following an irregular menstrual history, chiefly menorrhagic, for a year previous. Both were troubled with nausea and repugnance to food. But there were no other indications of pregnancy except the enlarged uterus. No discoloration of the nipples nor blueness of vagina. And both denied the possibility of pregnancy. The patient of yesterday is a spinster, the other a widow, and both between 30 and 35 years of age. By vaginal examination a small fibroid could be felt in both cases. They were both much reduced in general health from the persistent vomiting, and on account of the weight and pain in the pelvis begged that something radical be done. After consultations it was thought best to make an exploratory incision and then do what was deemed best. But in both cases, even after the abdomen was opened and the uterus drawn out through the incision, it was not possible to say that pregnancy did not exist. Incisions into the tumors, however, enabled me to pull out much larger fibroids than was expected and much softer than usual, leaving an uterus but little larger than normal and not pregnant. In the first case I proceeded further and did an hysterectomy; but upon the second, as I rarely now do an hysterectomy except

in malignant cases, I closed the cavity, from which I had removed the tumor, with several deep mattress sutures of catgut and accurately coaptated the edges of the peritoneum with a running fine catgut.

In this connection I wish to state, however, that I fully agree with Dr. Carmalt, in that while I find that the pressure of a fibroid will often prevent conception, and in cases where pregnancy has occurred will frequently produce a miscarriage, I have never had a fibroid prevent labor at term, but only retard it for a few hours. I can readily conceive of a fibroid being so situated as to block the pelvic outlet and thereby prevent the birth of the child; but in all of my cases I have been able by manipulation, especially with the woman in the knee-chest position, to work the tumor out of the pelvis. And for that reason I should much question the necessity of an abortion simply on account of the presence of a fibroid. Nature is inclined to take care of itself and lift the fibroid out of the pelvis as the uterus grows, and will certainly do so in a great majority of cases, especially if assisted. but even should the worst come to the worst, the child can be saved at term by a Cesarean section, which, according to modern methods, is but little if any more dangerous than a fibroid abortion or miscarriage upon a fibroid uterus.

DR. J. D. BISSELL.—Although I have many times performed myomectomy, I have not known pregnancy to follow in any of the cases. However, I consider the operation the one of choice if the patient desires it, and there can be left sufficient uterine tissue to form a functioning organ. The advisability of emptying the uterus when pregnancy complicates fibroids must be determined in each case independently.

My experience with fibroid tumors complicating pregnancy has not been extensive, but in none of the cases that have come under my observation have I deemed it advisable to remove the tumors or interfere with pregnancy. The tumors invariably moved out of the pelvis with the rise of the uterus and gave no trouble. In one of the cases the tumor was fully as large as that shown this evening.

DR. W. M. FORD exhibited a specimen which appeared to be an APPENDIX obtained in the following way:

Patient, J. Q., 45 years old, policeman; admitted to hospital June 18, 1904. Three weeks previously he had an attack of appendicitis, but the temperature had been normal for a week prior to admission. On admission to hospital, temperature 102° F., pulse 90, respiration 26. Examination revealed a boggy mass in right iliac region; no tenderness, no pain. In twenty-four hours temperature dropped to normal. Operation June 20th. Lateral incision; abscess cavity cut into; about five ounces creamy pus evacuated. In the pus floated a body of whitish substance which appears to be the appendix freed from all its attachment. Cavity of abscess drained with gauze; no fecal fistula; uninterrupted recovery.

DR. GRAD reported a case of

GENERAL PERITONITIS, ETIOLOGY, PERFORATED APPENDIX, WITH RECOVERY.

Mrs. B., seen October 9, 1904, early in the morning; twenty-four hours previously patient was taken with pain in the abdomen. At first pain was slight; later the attacks became more frequent and more severe. Few diarrheal movements. A physician was called in, who prescribed for cramps and diarrhea. Pain subsided slightly, but during the night pain returned much aggravated, movements increased in frequency, and menstruation also made its appearance, although the period was ahead of time. On examination abdomen slightly tympanitic, both rectus muscles stiff and board-like. Abdomen sensitive to touch all over—stomach, gall-bladder and appendix region. Patient complains of much pain. Respiration costal. Patient flat on the back; anxious look; afraid of being handled. Temperature 101° F., pulse 112, respiration 30 and short. Pelvic examination negative. No masses on cul-de-sac or side of the uterus. No history of missed periods. Patient is nulliparous, although married some years. Diagnosis of peritonitis was made, but etiological factor not decided. Hypo of morph., $\frac{1}{4}$ grain, in mxxx of aseptic ergot. Pain promptly relieved. Patient slept four hours. At this time, with the recti muscles somewhat relaxed, abdominal palpation revealed that the seat of greatest tenderness is the right lower quadrant of the abdomen. Slight nausea, no vomiting. Diagnosis, perforated appendix. Operation urged. Patient sent to hospital and abdomen opened at once; median incision. As soon as peritoneum was ripped pus flowed out freely. Peritoneum and intestine deeply injected; few pus flakes seen. On exploring the right iliac fossæ an appendix was brought into view, which was inflamed, edematous. Meso-appendix swollen and a perforation at the top of the appendix was visible, through which oozed out a tiny drop of pus. Pelvic organs normal, except for a grayish pus membrane on the ovary. Appendix removed, thorough salt sol. irrigation of abdomen. One strip of gauze passed to appendix and one behind uterus to drain pelvis. Lower angle of abdomen left open. Within twenty-four hours temperature dropped to normal, pulse below 100. Gauze removed at the end of the week. Patient making an uninterrupted recovery.

The following officers were elected for the ensuing year:

DR. P. F. CHAMBERS, President

DR. DOUGAL BISSELL, *Vice-President*.

DR. HERMAN GRAD, *Editor*.

DR. THOMPSON SWEENEY, *Secretary and Treasurer*.

Executive Committee—DR. LE ROY BROWN, DR. R. M. RAWLS, DR. SUMNER SHAILER.

H. GRAD, *Editor*.

TRANSACTIONS OF THE OBSTETRICAL SOCIETY OF LONDON.

EDWARD MALINS, M.D., F.R.C.P., *President, in the chair.*

Meeting of November 2, 1904.

CANCER OF THE CERVIX COMPLICATING LABOR.

DR. HERBERT R. SPENCER gave an account of three cases of cancer of the cervix complicating labor in advanced pregnancy which were delivered through the natural passages, and treated by high amputation of the cervix during the puerperium, or (in one case) five months after delivery. The patients remain well and free from recurrence eleven, eight and a half and eight years after the high amputation.

The children were born alive, and one survives; one of the patients has since been delivered by Cesarean section of a child, which also survives.

The writer has only been able to find two other cases in which the patients operated on for cancer complicating labor in advanced pregnancy have remained well for five years, viz.: Olshausen's (six and a half years) and von Ott's (eight and a half years).

The five cases were all delivered through the natural passages, and were operated on within a short period after delivery.

The writer also gives short notes of three cases of cancer of the cervix complicating labor in advanced pregnancy in which the disease was too extensive for radical treatment. Two were delivered through the natural passages, and one by Porro's operation (with the *serre-noeud*). All three cases recovered, and the children were born alive.

These six cases comprise the whole of the writer's experience of cancer complicating advanced pregnancy.

Tables are given of two series of cases from the Berlin and Leipzig clinics, eighteen cases in all, of which twelve were in the operable stage and were treated by vaginal or abdominal hysterectomy. Of these twelve cases two died from the operation, *i. e.*, the mortality was 16.6 per cent., and only one patient remained well five years after the operation.

Five of the Berlin and Leipzig cases, too far advanced for curative operation, were delivered by Cesarean section, followed in three cases by amputation of the body and suturing of the stump; four of these patients succumbed, giving an immediate mortality of 80 per cent.

The methods of treatment are briefly discussed.

The opinion held by Pinard, Bouilly and others that these cases are hopeless, that the end of pregnancy should be awaited and the

interests of the child only considered is shown to be erroneous. In the writer's opinion, labor should be induced by de Ribes's bag if the pregnancy is some weeks short of term, and treatment should have in view the cure as well as the safe delivery of the patient. How to obtain these objects will best be judged when more gynecologists publish all their cases and larger statistics become available. Meanwhile the author is in favor of the following:

1. Great care should be taken by the use of antiseptic solutions, uncontaminated instruments and the cautery to prevent local implantation of cancer cells.

2. In operable cases delivery should be effected *per vias naturales* when practicable, followed, during the puerperium, by the high amputation of the cervix with the galvano-cautery and, in certain cases, by the removal of the body immediately afterwards.

3. In operable cases in which the cervix will not dilate, the author suggests (a) the removal of the cervix with the galvano-cautery, followed by the delivery of the child and the removal of the body either by the vagina or by the abdomen, as being probably preferable to (b) the removal of the child by Cesarean section, and of the uterus by the vagina (Ohlshausen), and (c) the removal of the child and body by the abdomen, and of the cervix by the vagina (Fehling).

4. For operable cases in which the cancer has extended outside the cervix cauterization of the growth followed by abdominal hysterectomy.

5. For cases too far advanced for radical operation Porro's operation with the use of the *serre-noeud*.

DR. THOMAS WILSON congratulated the author on the extremely satisfactory lasting result of his operations in these three cases, but stated his opinion that the best method of operation for cases of this sort had not yet been determined. When the best method, whether abdominal or vaginal, in cases of uncomplicated cervical cancer had been determined, then it would be possible to apply a similar operation to cases occurring in connection with pregnancy. Dr. Wilson referred to two cases in which he had recently performed the so-called vaginal Cesarean section in the eighth month of pregnancy with immediate results favorable to both mothers and both children. He discussed the reasons which led him to adopt the vaginal operation in these cases and described the proceeding, which he found not difficult. Referring to Dr. Spencer's recommendation that in the last months of pregnancy labor should be induced and a radical operation only undertaken later, Dr. Wilson remarked upon the usual influence of pregnancy in hastening the growth of cancer, and referred to a case where abortion took place at the fourth month in a patient of twenty-four; cancer of the vaginal portion of the cervix which was present appeared before the abortion to be easily operable, but afterwards made rapid progress, so that on the seventeenth day supravaginal amputation did not suffice to eradicate the mis-

chief. In all operable cases, therefore, at whatever month of pregnancy they may be recognized, immediate radical operation should be undertaken. Whether this operation should be vaginal or abdominal the next ten years may be expected to show.

DR. G. E. HERMAN expressed his appreciation of Dr. Spencer's able paper. He thought the general rule of treatment in all forms of cancer, viz., to remove it as soon as possible, applied to cancer of the cervix in the later months of pregnancy. He considered that vaginal hysterectomy immediately after delivery should be easy, because the vagina was then so relaxed that the uterus could easily be pulled down to the vulva. He could not agree with Dr. Spencer in advising Porro's operation with the *serre-noeud* where delivery through the natural passage was impossible. He had only once performed Cesarean section for cancer; he sewed up the uterus in the usual way and the patient recovered.

DR. AMAND ROUTH thought that conservative Cesarean section was the correct treatment in operable cases, and gave details of one case where the woman recovered, but died in three months, a healthy child surviving.

DR. HANDFIELD-JONES, DR. BRIGGS and DR. W. S. A. GRIFFITH expressed the opinion that in Dr. Spencer's three successful cases the cancers, being all of the squamous-celled variety, were of the less virulent type of disease, and that the fact of non-recurrence after a lapse of years depended more on the type of the disease than on any detail of treatment.

DR. SPENCER, in reply, said that his objection to vaginal Cesarean section was due to risk of local inflammation. The growth of cancer in pregnancy was sometimes rapid, but not always; in his own case it was very slow. He believed that the old Porro operation with the *serre-noeud* was safer than the conservative operation.

DR. J. H. DAUBER showed a

DOUBLE SYMMETRICAL CYSTOMA

of unusual origin and connections which, on the motion of Dr. Cullingworth, was referred to the Pathological Committee.

DR. W. W. H. TATE showed a

DERMOID CYST OF OVARY

removed by abdominal section. It contained several beautifully formed teeth. The cyst, which at the time of removal was as large as a fetal head, had been the source of obstruction during labor five years previously, and had been associated with subsequent attacks of abdominal pain.

MRS. BOYD showed the uterus removed by

ABDOMINAL PAN-HYSTERECTOMY

from a patient of forty, who was the subject of squamous carcinoma of the cervix of the uterus. She and her colleague at the New Hospital for Women had, contrary to what had hitherto

been the more general practice, followed the plan of operating by the abdominal method in all cases of cancer of the body of the uterus, and in most cases of cancer of the cervix. They had now had in all twenty-one cases without a death, so that she claimed that the patient was not exposed to any more risk by adopting this method than by removal through the vagina.

MRS. BOYD also showed a

FIBROID OF THE BROAD LIGAMENT

removed from a patient sixty-three years of age, who had had copious hemorrhages and increase in size of the growth for five months. The uterus was enlarged and was removed by pan-hysterectomy. Its walls were thick and fibroid and the cavity was occupied by a tongue-shaped polypus, consisting of fibrin attached to an adenomatous base. The section showed a benign adenoma. The section of the fibroid showed ordinary fibroid structure.

DR. CUTHBERT LOCKYER showed a

CARCINOMA OF THE OVARY

of unusual type. The growth resembled in its structure the columnar cancer so common in the rectum, and as bowel symptoms had existed in this case for fifteen months, it seems highly probable that the solid mass in the hilum of the left ovary was secondary in origin to carcinoma in the rectum.

DR. HERBERT R. SPENCER showed a new

GALVANO-CAUTERY

which he had used many times for amputation of the cervix and for hysterectomy. The handle itself forms an insulator, and the whole instrument can be easily sterilized by boiling.

BRIEF OF CURRENT LITERATURE.

DISEASES OF CHILDREN.

The Infective Nature of Rheumatic Fever.—F. J. Poynton (*Brit. Med. Jour.*, May 14) illustrates his remarks by the study of a fatal case of rheumatic fever in a child. In July, 1902, a girl of 9 was brought suffering with chorea. Attack was moderate, general in distribution and ordinary in type. The mitral valve was damaged and heart rapid and excited. This was the first attack of rheumatism. It had commenced six weeks before, with vomiting, pains in limbs, swelling of wrist joints and then chorea. She stayed in hospital fourteen weeks. The chorea was cured but heart was unsatisfactory, rapid with distinct systolic murmur. By May, 1903, bruit had disappeared and at apex only a short first sound and normal second sound were heard. August 17th she was admitted to hospital. Fourteen days before she had pain over heart and in all limbs, looked cyanosed, had felt cold and shivery, and had suffered with attacks of vomiting. Her temperature was 103.8°, pulse 140 and respirations 40 on admission. Great cardiac distress. Although heart was greatly enlarged there were no signs of pericarditis. A loud systolic murmur in mitral area. Lungs showed nothing definite. The spleen was enlarged and tender, liver enlarged, and urine albuminous. While in hospital the symptoms were rapid anemia, sweating and abdominal pain. Temperature showed in the four hourly chart a continuous and moderate pyrexia. Ten days after admission she died suddenly.

The writer recognizes three types of endocarditis: 1. Simple endocarditis. In this the micro-organisms in the valve either cease to be active or are destroyed by the living cells of the tissues. 2. The fibroid type as in mitral stenosis. In this the infection is persistent, but the resistance of the tissues is great. 3. The malignant type. In this the micro-organisms grow in countless numbers in the valve; the vegetations may be either large or small, and the resistance of the tissues is feeble.

At the post-mortem the mitral valve covered with blood clot was removed and cultures were taken from the lungs, kidneys, spleen and gall-bladder. Bacteriological results from the cultures were: 1. Pure cultures of the diplococcus were found in the tubes inoculated from the valve, the spleen and the kidney. 2. The culture from the lung was not pure but the diplococcus was present among other micro-organisms. 3. Pericardial fluid and the blood gave negative result. This last negative result from pericardial fluid emphasizes the fact that these micro-organisms, when they grow in the body, grow best in the local lesions, and though often present in the blood do not thrive in it.

Practical applications of the infective view of rheumatic fever:

Early diagnosis is of extreme importance and physicians should educate the laity to the importance of gradual failure of health, wasting, vague epigastric and other pains, nervousness, night terrors, and anemias. There are certain facts, formerly uncertain, now rest on a sure basis: 1. The existence of a true rheumatic broncho-pneumonia and a rheumatic pleurisy. 2. Of a true renal rheumatism. 3. Of a true rheumatic peritonitis. The relation of tonsillitis to rheumatic fever has been recognized for more than a century. It is certain that one channel of infection is through the damaged tonsils in which the micro-organism is deposited. Almost as complete is the proof of the existence of a true rheumatic iritis and chorea. It is now possible to produce experimental heart disease. Our practical knowledge has profited, for it has shown: 1. That simple and malignant endocarditis can be stages in the same process, that they are not always essentially different, and that the malignant form does not always premise a secondary affection. It follows from this that if rheumatic endocarditis is infective it can be both simple and malignant in type. 2. It has shown that ante-mortem thrombosis may occur in the heart in rheumatic fever without any severe valvular damage. 3. Accurate knowledge can now be obtained upon the rapidity of the formation of vegetations and upon their actual structure. 4. It throws light upon the formation of infarcts in rheumatic fever, which experiment shows may form without the presence of any visible valvular disease or clotting of blood in the chambers of the heart. The bearing of this fact on the pathology of chorea is manifest. 5. The myocardial changes in rheumatism which were suspected by the clinician and elucidated by the pathologist are absolutely proved by experiment, for they can be produced by this micro-organism.

Subcutaneous Angioma in Infants. Considerations on the Treatment.—Adrien Besson (*Jour. des Sci. Méd. de Lille*, June 4) gives two cases and outlines treatment in general.

1st case. Infant 20 months. In center of middle frontal region a violaceous erectile tumor, size of small walnut, presents all the appearances of a simple cutaneous angioma. Mother always noticed it. Has grown perceptibly during last eight days. Swells visibly when child cries or is angry. Extirpated on the spot. Dressing taken off in eight days. Cured entirely; fifteen days afterwards there is only seen a light scar.

2d case. Infants 16 months. Presents on outer part of right side of neck at level of sub-clavicular region a subcutaneous angiomatous tumor size of a hazelnut but with a large base and a rather diffuse extension. Solution of Piazza employed. Injections every eight days with a Pravaz syringe. Compression at first made at the periphery of the tumor, needle driven into the angiomatous tissue and 5 or 6 drops injected, waiting from a half to one minute before withdrawing the needle. A reaction occurred during the day, variable, but might be intense. The infant received 7 injections. The tumor visibly sank down and

grew pale, presenting indurated islets, scattered corresponding to the injected zones and giving the sensation of grains of lead encapsulated. The mother, judging the result sufficient, did not return. The three methods of treating these tumors are: Coagulating injections, electrolysis, extirpation. 1. Injections. There have been used nitric acid, chloride of lime, alcohol, wine, tinct. iodine, acetic and citric acids, chloral hydrate, and, above all, perchloride of iron. Unfortunately, the use of these has given rise to very grave accidents, even death from detached clots. The solution of Piazza avoids these; the composition is as follows: Chloride of sodium 15 gr., perchloride of iron 25 gr., distilled water 60 gr. 2. Electrolysis. The results are very good. Often there is no cicatrix left. It is painful, but cocaine may be used or chloroform. 3. Extirpation pure and simple. Procedure of choice. Great care in hemostasis and asepsis.

Indications for use of different methods:

1. Extirpation. Where tumor is limited, or where loss of blood is not feared (very young infants), or where cicatrix is not exposed. 2. Electrolysis. Where the tumor is exposed, and has a large base (especially in the face). 3. Injections of solution of Piazza in intermediary cases circumscribed tumor, extirpation refused, tumor still circumscribed, but with a more extensive and diffuse base (in other regions than the face).

Koplik's Spots in the Diagnosis of Measles.—J. C. Muir (*Lancet*, June 11) publishes eleven cases from Plaistow Hospital, all showing the Koplik's spots, occasionally within twenty-four hours of the onset and never delayed beyond the third day of the pyrexia. The interval from their appearance to that of the rash was from one to three days. In almost all of the cases the prodromal catarrh was very slight, a fact which enhanced the value of the spots. In some of them a certain diagnosis at that date was impossible except for their presence. Other symptoms which will usually be present and may occur before the pyrexia must not be neglected. It is where these other symptoms are slight and inconclusive that the presence of the spots may decide the diagnosis. They are absent in, roughly, 10 per cent. of recorded cases.

The Treatment of Hernia in Young Children.—P. Lockhart Mummery (*Brit. Jour. of Children's Diseases*, June) says that the number of cases of hernia in infants and young children is considerable and the treatment by trusses is unsatisfactory. It is not easy with a fat baby to obtain a truss to remain in position and keep up hernia without having one with a strong spring, which will make skin sore. The old wool or worsted truss, if it were capable of keeping up the hernia, does not cause sufficient pressure on the neck of the sack to obliterate it. Under most favorable circumstances the child must wear a truss constantly for a period of probably two years, and even then may fail to cure the hernia. If the hernia is cured in the sense that it no longer comes down the child is left with a condition which often

predisposes to hernia in later life. The sac is partly unobliterated, as in most cases the sac is congenital and cannot be returned into the abdomen. Hence the child is left with a hernial sac which is ready at any time to receive a hernia should the abdominal wall give way. The truss is rarely of use in the class of cases met in hospital practice. The mother will seldom be able to change the truss without hernia coming down, and as a rule it constantly does so behind the truss and the latter presses upon the neck of the sac, in which case the truss is not only useless but a source of danger, predisposing to strangulation. The most satisfactory method of treatment is by operation.

The advantages are: 1. It gets rid of the sac. 2. It cures the hernia in about three weeks and does not necessitate the wearing of an instrument by the child. A suitable operation is a modification of Barker's. Make usual incision, separate sac up to internal ring. Open sac and with one finger inside to act as guide and to keep back intestine, ligature neck of sac over point of finger as high up and as near internal ring as possible. The sac is then cut away on the distal side of ligature. Separate peritoneum slightly with point of finger from around the internal ring. One end of the ligature is threaded upon a hernia needle of suitable size, and needle passed into the internal ring and made to perforate all the thickness of the abdominal wall from the inside, so as to emerge about half an inch above the ring. The other end of the ligature is threaded and brought through the abdominal wall in the same manner, so as to emerge a little distance from the first end of the ligature. Then by drawing upon the ends of the ligature the neck of the sac is drawn away from the internal ring and the ends are tied together, so as to retain the neck of the sac in its new position. The internal ring is not stitched up. It is not necessary in infants; time is saved, and if the sac is removed the ring contracts. In older children, or where ring is large, close the ring with one or two stitches.

After-treatment is most important; chief point is position. The best is with the legs slung up to a cross-bar. Stirrups are attached to each leg by means of extension strapping, and both legs slung up to a horizontal bar over the top of the cot in much the same way as in treating a fracture of the shaft of the femur by Bryant's method. Advantages of this position are: 1. It is comfortable and prevents the child from moving much. 2. Child is easily kept clean. 3. It affords valuable support to inguinal rings, and prevents undue pressure just after operation. child crying, etc. 4. It relaxes all tissues in neighborhood of wound and allows healing to take place rapidly and effectually.

Strangulated Inguinal Hernia in an Infant Twenty-eight Days Old; Operation Two Days Later; Recovery.—R. Clemens Lucas (*Brit. Jour. of Children's Dis.*, June) gives the following cases: J. E., born June 27th, 1903, was admitted into Guy's Hospital July 27th, 1903, suffering from a strangulated right inguinal hernia. He was the first child of healthy parents

and had been breast fed. Mother stated that he often cried when passing urine or feces and sometimes vomited part of milk taken. On the evening of July 25th, when being washed, the child's scrotum was noticed to be swollen. The same night he screamed violently and vomited several times. Vomiting continued all day and the following night, and on Monday, July 27th, the child was brought to the hospital. Bowels had not acted for two days, and he had vomited everything taken since Saturday. The abdomen was distended. The scrotum was dark blue, firm, and distended. Above this, in right inguinal region, another tense swelling was found. There was a distinct interval between the two in which the cord could be felt. The left half of the scrotum was empty, but the left testis could be felt just outside the external abdominal ring forming a third swelling. It was decided to explore the upper swelling on the right side, thinking this might be a strangulated funicular hernia. Operation July 27th. Cut down upon right inguinal swelling with oblique incision in direction of inguinal canal. After division of skin and superficial fascia the swelling exposed was dark blue. The two swellings were not continuous except that the cord connected them. The sac was divided with scissors, some blood-stained serum escaped and at the bottom a small knuckle of intestine was exposed about the size of the end of a forefinger, dark purple, but it had not lost its lustre. The neck of the sac was stretched and the bowel slipped back into abdomen. The sac was tied and cut away, and the canal and ring sutured. On August 12th discharged cured. Remarks: Strangulated hernia in infants is of special interest not only from its comparative rarity but because it is liable to be overlooked. The relative proportion of strangulation in children compared with adults is given as 1 to 108, which is easily accounted for by the greater elasticity of the tendinous and fibrous structures in young children. The symptoms peculiar to infants as compared with adults are: 1. There is violent screaming impossible to pacify, indicating that the child is suffering agony. 2. The tendency to the suppression of urine as well as constipation. 3. The rapid effusion of serous fluid into the sac, rendering it translucent, and effusion into the general peritoneal cavity. 4. The greater tendency to rapid collapse.

Common Deformities of the Spine.—Henry Ling Taylor (*The Post-Graduate*, July) says that the common forms of spinal deformities may be classified as follows: A. Pathological: (1) Rachitic Spine, (2) Tuberculous Spine, (3) Rheumatoid Spine. B. Postural: (1) Round Back, (2) Lateral Curvature.

Rachitic Spine is due to postural influence on a spine weakened from a general pathological process. The Tuberculous Spine—Pott's Disease—ordinarily produces a hunchback, and is due to tuberculosis localized in the bodies of the vertebræ. A Rheumatoid Spine is one more or less stiffened by the rheumatoid process. The purely postural deformities are due, speaking broadly, to

the insufficiency of the structures to sustain the superimposed weight. The result is lateral curvature, or round back, often called round shoulders.

Rachitic Spine.—Children walk late. When they walk have bow-legs or knock-knees. They have prominent belly, beading of the costo-chondral junction, fewer teeth, and are extremely prone to intestinal and bronchial disturbances. They lack the characteristic pains of Pott's disease, the deformity is round, not angular, and laying child on its face deformity largely disappears. There is little spinal stiffness. The main points of distinction between a rachitic spine and a tuberculous spine are the mobility of the spine and the character of the deformity. Treatment: Diet of fresh milk and eggs and syrup of hypophosphites teaspoonful t. i. d. Restrict starchy foods.

Tuberculous Spine. In most cases there is history of a fall, developed usually with moderate traumatism. These patients walk carefully, throw their shoulders and head back, have pain in the stomach on being jarred, because the spinal nerves in relation to the disease focus are distributed to the epigastrium, and when pinched at their point of emergence the pain is referred to their terminal distribution, cry at night, and on waking up as if in pain, and lose appetite. There is a slight projection of the vertebræ. And the patient cannot stoop naturally. The weight bearing part of the spine becomes weak as the bodies are softened and eroded and the weight of the head and chest gradually crush the spine down and make an angle at the diseased point. The angle is always sharp in the beginning. These cases should be diagnosed early. Treatment is to enforce local rest and improve nutrition. Jackets and braces to enforce rest of the part and at the same time allow the patient to be taken into the open air. Disease above the tenth dorsal vertebræ demands a head support. In very young children, say two years or younger, place the child on a portable gas-pipe frame properly covered, shaped and padded and the child strapped to it by a broad apron.

ITEM.

The next meeting of THE INTERNATIONAL SOCIETY OF GYNECOLOGY AND OBSTETRICS will be held in St. Petersburg from the 11th to the 18th of July, 1905. As this time is in the holiday months, it is hoped that many American gynecologists and obstetricians will be able to attend and take part in the congress.

The chairman of the American Committee, DR. A. PALMER DUDLEY, of 678 Madison Avenue, New York City, will be pleased to do all in his power to aid, and will transmit to the committee at St. Petersburg any communications referred to him by those who may desire to attend the congress.

THE AMERICAN JOURNAL OF OBSTETRICS

AND

DISEASES OF WOMEN AND CHILDREN.

VOL. LI.

FEBRUARY, 1905.

NO. 2.

ORIGINAL COMMUNICATIONS.

THE PATHOLOGICAL ANATOMY AND PATHOGENESIS OF
THE TOXEMIA OF PREGNANCY.¹

BY

JAMES EWING, M.D.,

Professor of Pathology, Cornell University Medical College, N. Y. City.

MY acquaintance with the pathology of the hepatic toxemia of pregnancy began in 1892, when serving as pathologist to the Sloane Maternity Hospital. The study has been pursued continuously ever since, and is not in any sense complete, but the material collected points to some definite conclusions which it seems desirable to present in a preliminary way at the present occasion.

I propose to demonstrate the hepatic lesions of the three clinical manifestations of the toxemia of pregnancy in connection with a short clinical description of the cases, and to follow the demonstrations with some brief remarks on the pathogenesis of these lesions.

ECLAMPSIA.—Case I. Hemorrhagic hepatitis.—The liver in the gross is usually normal in size, reduced in consistence, while surface and section present many minute hemorrhagic foci. Microscopically, there is a uniform and intense granular, hydropic and fatty degeneration of the liver cells which results in nearly complete disorganization of the protoplasm, and therefore in abolition of the function of these cells. There are also numerous focal necroses. There are finally many minute hemorrhages, usually, but not always, in relation to the necrotic foci.

¹Read before the New York Obstetrical Society.

This lesion occurs practically without exception in all typical cases of acute fatal eclampsia at term, and in at least 95 per cent. of all cases of any variety of eclampsia. It is pathognomonic of this type of the disease.

*Case II. Acute yellow atrophy.*¹—Patient aged 21. Pregnant 4½ months. For two weeks suffered from severe headache, later epigastric pain and vomiting of all ingesta. Vomiting gradually subsided, but headache continued and patient began to act hysterically. Slight fever 101-103°, epistaxis, jaundice. Muscular twitchings, one general convulsion, two hours before death. Urine-alkaline, 1018, no albumin; leucin and tyrosin present. No casts.

This case falls in the intermediate group between eclampsia and acute yellow atrophy, the clinical diagnosis depending upon the attitude of the particular observer. It completely fits neither type of disease, but on account of the convulsions and the nervous symptoms may serve the present purpose of illustrating the connection of acute yellow atrophy and eclampsia. The liver was slightly reduced in size, weight 3 pounds, 2½ ounces, consistence reduced, section mottled red and yellow. The histology shows complete hydropic and fatty degeneration of the inner two-thirds of lobules, an intermediate zone of necrotic and disintegrated cells, and a narrow peripheral zone of cells showing slight granular and fatty degeneration.

This case illustrates the truth of the observation made in 1888 by Klebs (Ziegler's Beit., Bd. III) that eclampsia may show the hepatic lesions of acute yellow atrophy. Similar cases were fully described by Frerichs in 1858. They usually differ clinically from those showing hemorrhagic hepatitis, in that they are less acute; convulsions are less prominent, while toxic symptoms are very pronounced, and they are not limited in onset to the last month of pregnancy.

Case III. Eclampsia with minimal hepatic lesions. Very rarely fatal hepatic toxemia with convulsions may fail to show prominent lesions of the liver, and in fact the liver after superficial examination may be pronounced normal.

In the present case the liver in the gross was but slightly altered, showing considerable reduction in consistence, and indications of congestion and cloudy swelling. On careful microscopic examination, however, it reveals moderate diffuse granular and

¹ For Case II of eclampsia and of pernicious vomiting I am indebted to Dr. Israel Strauss, who will later report them in detail.

fatty degeneration, foci of intense degeneration with disorganization of the liver cells, foci of partial necrosis in which the cells show watery contents and pyknotic nuclei, and areas where the cells are distended with bile pigment. These lesions are very significant, as they belong to the process of autolysis of the liver cells, which is attended with profound alterations of the function of the organ.

The clinical history of this patient was briefly as follows: Well nourished woman, age 36, pregnant 6½ months. For one week had been growing gloomy and stupid. One day before admission to the hospital, had a convulsion affecting face, arms, and shoulders. Was received comatose. Pulse 80, temperature 96.4°. Respiration stertorous. Cyanosis. No jaundice. Vomiting not ascertained. Urine clear, amber-colored, s.g. 1015, albumin a heavy trace; no test made for urea or leucin and tyrosin; many hyaline, granular and epithelial casts. After delivery of dead fetus, had one convulsion and died in two hours.

These three cases demonstrate that eclampsia may show the hepatic lesions of (1) hemorrhagic hepatitis, or (2) acute yellow atrophy, or (3) no striking gross changes, but only microscopic lesions, which, however, prove to be those of the very significant process of autolysis of the liver cells.

PERNICIOUS VOMITING.—*Case I.* Well nourished woman of 26 years. This first pregnancy began with vomiting which subsided in the third month, leaving patient in poor general condition. In eighth month, vomiting began again, increased gradually in severity for two weeks, with abdominal pains, and mental dullness. Comatose two days before death. No jaundice. No convulsions.

The liver was of normal size and of typical nutmeg appearance. Consistence slightly reduced. Microscopically, there is complete necrosis of inner two-thirds of lobules, extreme hydropic degeneration of outer third with a peripheral zone showing moderate fatty degeneration.

Case II. Patient well-nourished, aged 32. Suffered severely from vomiting in former pregnancies. Third pregnancy began with severe vomiting which subsided in second month, but began again acutely in eighth calendar month. Treated as hysterical with results, as vomiting was controlled two days by moral suasion. Died on eighth day of attack without convulsions and after vomiting had nearly ceased. No jaundice.

Liver weighed 1¾ pounds, very soft, mottled red and yellow.

Microscopically, there is intense granular, hydropic, and fatty degeneration of cells. Cells in inner half of lobules are necrotic and nearly disintegrated. No evidences of bile stasis. This is a very common type of lesion in the livers of women dying from the toxemia of pregnancy.

Case III.—Well-nourished woman of 30 years. Previous history not obtained. Was brought to Presbyterian Hospital by ambulance at the request of her husband, who said she had been acting queerly for a week past and vomiting repeatedly, which he attributed to alcoholism. Was transferred to Bellevue Hospital with the diagnosis of "hysteria, fibroids." Received in incoherent mental condition. Urine examined at once, contained a faint trace of albumin, leucin, and some casts. Diagnosis of toxemia of pregnancy made and continuous rectal irrigation begun. No fever, jaundice, or convulsions. Pulse rapid, feeble. Death 24 hours later.

At autopsy, uterus contained a 6 months' fetus. Liver very soft, congested and fatty, weight two pounds two ounces. The blood was remarkably thick and cohesive. Colon and lower ileum distended with watery fluid. Microscopically, the liver shows general intense granular and hydropic degeneration of cells. The centers of lobules are very fatty. A few isolated cells are necrotic and disintegrated. There is extreme congestion of the organ. No bile visible. Chemical analysis showed moderate increase of fat in the liver. Distribution of nitrogen not yet fully determined. On superficial examination, one might conclude that this liver was but slightly damaged, and of no significance in the case, but careful histological examination and chemical analysis showed that it had undergone extensive autolysis.

These three cases, selected from others clinically diagnosed as vomiting of pregnancy, show that this disease when fatal may be associated (1) with acute yellow atrophy of the liver, or (2) with the same necrotic process in a liver which is not reduced in size, or (3) with less marked degenerative changes in the liver which might be overlooked or ignored, but which really indicate extensive autolysis and profound disturbance of the function of the organ.

Moreover, the hepatic lesions of these three cases of pernicious vomiting are identical with those just demonstrated in the last two cases of eclampsia. As one of these cases of pernicious vomiting gave a distinctly atrophic liver, the general conclusion must be drawn that the morbid process in eclampsia, acute yellow

atrophy, and pernicious vomiting of pregnancy is one and the same. This conclusion is of course not new, but merely a verification as regards eclampsia and acute yellow atrophy, of the statement of Klebs made in 1888, and of the recent statement of Stone (*American Gynecology*, Vol. II., 1903), regarding the identity of all three manifestations of the toxemia of pregnancy.

Fatal acute degeneration of the liver in a pregnant rabbit.—After being delivered of a litter of five young at term, a large rabbit in the animal house at the Cornell Laboratory was shortly found dead. The liver, removed at once, was extremely fatty, not reduced in size, moderately reduced in consistence. Besides acute fatty degeneration of extreme grade, there is also extensive granular and hydropic degeneration, indicating autolysis. No other cause of death was found.

Toxic effects of the blood from a case of pernicious vomiting.—The injection of 10 c.c. of normal human blood into the peritoneal cavity renders a rabbit somewhat restless for 20-30 minutes, after which there are no further symptoms. Ten c.c. of the blood from the cadaver in Case III. of pernicious vomiting was injected into the peritoneal cavity of a rabbit. The animal soon became extremely restless, after 20 minutes there were frequent muscular spasms of legs and body, the animal fell on its side and seemed moribund, but slowly recovered. Five days later it was found dead. The liver was soft, intensely congested and fatty. The cells showed everywhere extreme granular, hydropic, and fatty degeneration. I am not prepared to offer any positive interpretation of this experiment, although its results are suggestive of an unusual toxic action of the injected blood.

Post-gestational acute yellow atrophy.—The patient was a poorly-nourished woman aged 40. Previous history not obtained. Two months before death, she suffered an abortion at about the third month and was curetted. After discharge from hospital, was never well, but suffered from attacks of indigestion, vomiting, and abdominal pain. Two weeks before death, the symptoms became aggravated, jaundice supervened, then diarrhea, stupor, and coma. There were no convulsions. Death on 14th day of acute illness.

Liver weighed one pound ten ounces, was very soft, uniformly deep red, lobules obliterated. Microscopically, there are the changes of a late stage of yellow atrophy. Only a few islands of fatty liver cells remain. Nearly the entire organ is reduced to a disintegrated mass of necrotic liver cells mixed with blood and

bile. Chemical analysis proved the absence of free phosphorus and the presence of leucin and tyrosin.

Acute leukemia following pregnancy.—In 1897, I examined at autopsy two cases of acute myelocytic leukemia following pregnancy. One of these patients was delivered at Sloane Maternity Hospital seven months before, and from the leukemic standpoint, the case was published by Dr. W. H. Thompson in Vol 53, *N. Y. Med. Record*. The patient was never well after confinement, and entered Roosevelt Hospital with severe anemia and a febrile disease which was regarded as typhoid fever. The leukemic nature of the case was suspected but not confirmed till after the autopsy.

The liver of this case showed the gross and microscopical appearances of acute yellow atrophy and in addition the middle zone of the hepatic lobules was necrotic and infiltrated with leucocytes.

In the second case, with a similar clinical history, the liver shows extreme diffuse granular, hydropic, and fatty degeneration, but only the portal canals are infiltrated with leucocytes.

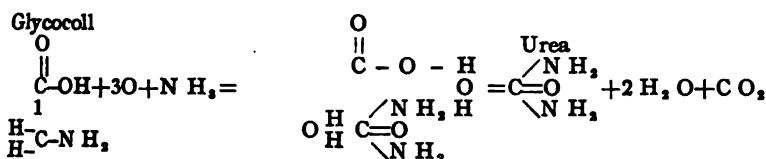
There is considerable literature on the relation of pregnancy and leukemia, but I have been unable to find a satisfactory demonstration of the nature of this relation. There are at least two facts which seem to connect acute leukemia and the toxemia of pregnancy. These are, first, the occurrence of leukemia shortly after pregnancy, which seems to be too frequent to be explained as a mere coincidence; and second, the presence of leucin and tyrosin in the urine both of leukemia and of the toxemia of pregnancy. To these may be added the similarity of the hepatic lesions of the two diseases. The subject appears therefore to demand further study from both the clinical and the pathological sides.

Other cases which have come to my notice suggest that the toxemia of pregnancy may have important relation to the severe anemia which follows parturition, and fundamental relation to puerperal sepsis.

Some important questions may be considered in connection with the cases here presented.

The exact nature of the disturbance of nitrogenous metabolism which is responsible for the clinical manifestations of the toxemia of pregnancy is a failure of oxidizing capacity on the part of the liver. For this reason, the proteid derivatives, principally amido-acids and ammonia, which are normally combined by the liver into urea, are no longer combined but circulate free in the blood in poisonous form, and are to some extent excreted by the kidneys.

The following formula represents, according to Hoffmeister's view, the chemical process of urea synthesis, the failure of which leaves poisonous proteid derivatives in the blood.



Besides ammonia and amido-acids, other proteid derivatives, as those containing sulphur, fail to be oxidized and these doubtless contribute to the toxemia. The exact identity of the poisons has not been determined, for they are probably very various and apparently not fully accessible to present chemical and biological methods, but there is no doubt about their existence in the blood and their action upon the viscera. As early as 1858 Frerichs detected leucin crystals in the heart's blood in these cases and lately Neuberg and Richter (*Deut. med. Woch.*, 1904, p. 499), have demonstrated very large quantities of leucin, tyrosin, and lysin in the blood of acute yellow atrophy. The complex nature of the sources of these poisons renders less obscure the fact that the clinical manifestations of the toxemia of pregnancy vary from mild vomiting to acute yellow atrophy.

The relation of the mild to the severe cases of vomiting of pregnancy also requires very careful consideration. No one doubts that the mild and the fatal cases of eclampsia are identical in nature, but there persists a definite impression in some quarters that acute yellow atrophy never occurs in mild form but is always fatal, while it is still generally taught that the mild vomiting of pregnancy is "physiological," and that the severe vomiting is an exaggerated form of the other, but without definite pathological basis. Impressed by the supposed rarity and unfavorable prognosis of acute yellow atrophy, clinicians seldom attempt the diagnosis of this disease, hence only the fatal cases are commonly recognized. But recent study of the toxemia of pregnancy and of many other clinical conditions furnishes abundant evidence that the morbid process in acute yellow atrophy is of very frequent occurrence and is often followed by recovery.

On both clinical and pathological grounds, there is just as little reason for separating the mild and the fatal cases of vomiting of pregnancy as for denying the identity of mild and severe cases

of diabetes. Vomiting is seldom the only symptom present in early cases of vomiting of pregnancy, but observation usually shows also, striking mental symptoms, headache, hysterical tendencies, pruritus, constipation, lassitude, etc., all of which doubtless result from the mild auto-intoxication which is the cause of the vomiting. No one may claim that whenever a pregnant woman vomits, she is suffering from auto-intoxication. There are many causes of vomiting, and the pregnant woman may be alcoholic or have a brain tumor, but the characteristic vomiting of pregnancy is a perfectly definite clinical entity, which progresses from mild to severe stages and types, and after death, there is a very definite lesion in the liver. This lesion is attended with a disturbance of nitrogenous metabolism and the failure of urea formation, and is marked by the appearance in the urine of many unoxidized proteid derivatives. This same disturbance of nitrogenous metabolism is present in cases of vomiting of pregnancy which are not fatal, and the unoxidized proteid derivatives appear in the urine of many such cases. I have recently found crystals resembling leucin in the urine of five cases of hyperemesis which recovered. I have not yet positively identified these crystals as leucin but see no reason to doubt that systematic study of the urine of these cases will show that these principles or other evidences of deficient oxidation are invariably present in comparatively early stages of the severer cases.

The urinary changes in the toxemia of pregnancy are of great importance for diagnosis and prognosis as well as for their bearing on the essential nature of the disease. These changes indicate chiefly deficient oxidation of proteid derivatives. Instead of urea, uric acid, ammonia, leucin and tyrosin and other unoxidized proteid radicles appear in the urine and instead of sulphates there are unoxidized sulphur compounds. As leucin and tyrosin and ammonia are estimated with urea by the hypobromite test, this test is unreliable in following the urinary changes in pregnancy. From a short series of cases of toxemia, I am led to believe that the examination for various unoxidized proteid derivatives will prove a fairly reliable indication of the seriousness of the case. It is not sufficient to examine the urinary sediment for leucin and tyrosin, but the urine freed from albumin must be precipitated by basic lead acetate, filtered, the lead removed by a current of hydrogen sulphide, and the filtrate evaporated to a syrup in which characteristic crystals of leucin with radiate and concentric striation are identified by the microscope. Albumin and casts are

sometimes present, but may be absent in dangerous stages of the disease and even in fatal cases.

The *absence of jaundice* is characteristic of fatal cases of vomiting of pregnancy which show the hepatic lesions of acute yellow atrophy. It simply means that the bile-producing function of the liver is inhibited. When jaundice is prominent, the diagnosis ordinarily given is acute infectious jaundice of pregnancy. There is nothing in the behavior of this symptom to warrant a separation of the particular cases showing jaundice. (Cf. Frerichs, "Diseases of the Liver," Sydenham Soc. Trans., 1860, p. 192.) Eclamptics also sometimes develop severe jaundice.

The present view of the nature of the toxemia of pregnancy classes the disease as a functional disturbance of the liver, usually but not necessarily attended by severe anatomical lesions of this organ, and secondarily with functional disturbance and anatomical lesions of the kidneys and other organs. The ground for regarding the disease as primary in the liver is the fact that the synthesis of urea is exclusively a function of the liver. Disturbance of the kidneys doubtless exists from the first but only becomes pronounced when the poisons resulting from the failure of oxidation in the liver cause degeneration, congestion, and exudative inflammation of these organs. Hence the disease may be far advanced before albuminuria appears.

As the morbid process is originally a functional disturbance of the liver, its intensity is not entirely dependent on any anatomical changes in the organ, and hence we find some fatal cases with minimal lesions of the liver. The relation of these lesions to the loss of oxidative capacity of the liver cannot at present be fully explained. The anatomical lesions certainly follow and do not precede the disturbance of function, and there may very well be several steps between the loss of oxidizing capacity, and the hydrolysis, fatty degeneration, and necrosis of the liver cells.

Probably many factors are concerned in the disturbance of nitrogenous metabolism, as retained principles ordinarily thrown off at menstruation, and increased metabolism required in the growing fetus. Of recent theories, that which connects the thyroid gland with the morbid process is one worthy of consideration. Extirpation of the thyroid or parathyroid disturbs nitrogenous metabolism, but so do many other pathological conditions, which have no necessary connection with the toxemia of pregnancy. It is not necessary to fully explain the ultimate origin of

the toxemia before recognizing its existence and practical importance.

While the pathologist ordinarily avoids treatment, there are some occasions when appearances found at the autopsy table are of striking therapeutic interest. I have encountered two such significant conditions at autopsy in these cases. One was the distension of the intestinal tract with saline solution in a subject which had failed to absorb any of the fluid, and the other was the remarkable concentration of the blood in some cases. In two cases the blood was found remarkably thick, viscous, and cohesive to an extent I have never seen in any other condition, and which must have been of itself dangerous to life. These conditions indicate that saline infusion is required in the severe stages of hyperemesis or acute yellow atrophy, both to eliminate the poisons and to maintain the normal concentration of the blood; and that saline irrigation cannot be relied upon in a patient who is incapable of absorbing fluids.

Another conclusion which seems to follow from the pathological study of these cases is the absence of any necessarily fatal character in the disease. We are not dealing here with an uncontrollable bacterial infection nor with a hopeless anatomical lesion, but with a disturbance of function which only secondarily leads to organic lesions. If the poison can be eliminated or its further production prevented, there is nothing in the majority of the lesions which is incompatible with life, and there is demonstrative proof that extensive lesions of the liver of the present type are sometimes followed by spontaneous recovery. Hence the indications are for energetic treatment upon the rational basis that the disease is an auto-intoxication. Saline irrigation and infusion seem to be the most effective procedure in serious stages of the disease and there are very evident reasons for its proved usefulness. I may take this opportunity of recommending Ringer's fluid, which has proven much more effective than the simple saline solution in many conditions, and there are special indications for its use in the toxemia of pregnancy which has the features of an acid intoxication. Dr. S. P. Beebe of the Loomis Laboratory is just now prepared to supply gratis the mixed ingredients of Ringer's solution in sterile tubes. Its composition is as follows: Sodium chloride, seven grams; calcium chloride, two grams; potassium chloride, one gram; sodium bicarbonate, one gram; aqua d., 1000 c.c.

The literature on Ringer's fluid and its modifications may be

found in an article by Gross (Pflüger's Archiv, Bd. 99, p. 264). This solution is best prepared with distilled water recently boiled, and the salts must not be heated enough to decompose the sodium bicarbonate.

ECLAMPSIA, WITH REPORT OF CASES.¹

BY

L. M. ALLEN, M.D.,

Associate Professor of Obstetrics and Chief of the Obstetrical Clinic in the University of Maryland School of Medicine; Consulting Obstetrician to the United Charities Hospital of Cambridge, Md.

IN any subject where the pathology—the foundation of our knowledge of disease—is so little understood, there is always a certain amount of interest, and with this limited knowledge, it follows necessarily that our treatment of such a disease is not based upon a solid foundation, but is more or less dependent upon the symptoms presented, and to some extent is guess work.

My purpose in presenting the subject of Eclampsia to you this evening, is that I have for your consideration a comparatively large number of cases presenting many phases of the disease, and hope that some deductions can be drawn from both the pathological and clinical findings. The cases which I report are those that have occurred in the last 3,400 confinements in the *In-* and *Out-*door departments of the Free Lying-In Hospital of the University of Maryland. Unfortunately, many of the cases occurred in the out patient department, and were seen for the first time after the occurrence of one or more convulsions, in consequence of which, in these cases, the early history and the urinary examination prior to the convulsions are wanting. In the cases which were in the Hospital under observation at the time of the attack, it is possible to give a much more complete history and to show the condition of the urine qualitatively, quantitatively and microscopically, as well as a lower mortality, on account of the fact that treatment could be instituted before it was too late. In these 3,400 cases there were 33 cases of "Eclampsia" (active), and 10 cases of severe "Toxemia," of Pregnancy. These will be considered separately in the statistics, but later on the whole subject will be taken up as one—the toxemia being only premonitory to the active outbreak. There occurred therefore, one (1) case of eclampsia in every 103 confinements.

¹Read before the Medical Journal Club, March, 1904, and published by courtesy of Professor L. E. Neale.

Color.—White, 12 or 36 per cent.; black, 21 or 64 per cent.

Age.—Oldest, 35; youngest, 14; average, 20 years and 6 months.

Primiparæ, 26 or 79 per cent.; multiparæ, 7 or 21 per cent.

Married, 10 or 34 per cent.; single, 23 or 66 per cent.

Time of occurrence.—Before labor in 14 or 42 per cent.; during labor in 9 or 27 per cent.; after labor in 10 or 31 per cent.

Earliest during pregnancy, 5th month; latest after labor, 40 hours.

Number of convulsions, most 33; least 1.

Convulsions ceased after delivery in 12 or 36 per cent.; convulsions better after delivery in 8 or 24 per cent.; convulsions worse after delivery in 2 or 6 per cent. One patient died undelivered.

When the number of cases that became worse after delivery, namely, two (2) are added to those cases which occurred post-partum, namely ten (10), making twelve (12) in all, we see that thirty-six (36) per cent. of the cases were not better after the uterus was empty.

Condition of patient when seen: Good in 7 or 21 per cent.; fair in 7 or 21 per cent.; bad in 19 or 58 per cent.

Pulse above 100 beats to the minute in 28 or 84 per cent.; pulse below 100 beats to the minute in 5 or 16 per cent. Four of the latter recovered. Premonitory symptoms present in all.

Method of Delivery.—Artificial, 18 or 55 per cent.; natural, 14 or 42 per cent.; forceps, 6 or 18 per cent.; version, 11 or 33 per cent.; manual delivery of breech, 1 or 3.5 per cent.; undelivered, 1 or 3.5 per cent.

"Accouchement forcé" practiced in 15 or 45 per cent.

Method used for performing accouchement forcé: Manual dilation, 8; Champetier De Ribes, 2; Bossi dilator, 2; cutting (Dührssens), 3.

Venesection practiced in 15 or 45 per cent.

Excessive uterine hemorrhage in 13 or 39 per cent.

Bleeding in all, 28 or 85 per cent.

Chloroform used in 24 or 72 per cent.

Morphia used in 33 or 100 per cent.

Chloral used in 33 or 100 per cent.

Bromides used in 33 or 100 per cent.

Salt solution used in 33 or 100 per cent.

Eliminants: Magnesia sulphat, 33 or 100 per cent.; oleum tiglli, 22 or 60 per cent.

Veratrum viride used in 8 or 24.13 per cent.; apparently beneficial in 4 or 50 per cent.; no effect noticed in 3 or 37 per cent.; apparently did harm in 1 or 13 per cent.

Complications.—Nephritis present in all cases examined, 100 per cent.; acute nephritis present at the time of the attack in 30 cases or 93.1 per cent.; 29 of these originated with the toxemia; 3 were acute exacerbations of an already existing nephritis.

In two (2) cases there was no evidence of nephritis present at the time of the outbreak, but albumen was present a short time after and casts were seen on the third and fifth puerperal days respectively. One case was not examined at all; died short time after being seen.

The function of the kidneys was seriously impaired in 21 or 64 per cent.; slightly impaired in 7 or 22 per cent.; not impaired in 4 or 14 per cent. Casts in all examined.

In cases examined before the attack, albumen was present in all except two, in which it was found in abundance following the convulsions. Quantitative estimation of urea made in twenty-two (22) cases.

Urea diminished in 21 or 95 per cent.; least amount, 1.2 grms. in 24 hours; jaundice present in 2 or 6.89 per cent.

One patient gave history of having had a previous attack. Puerperal insanity lasting six days, followed one.

Two cases of twins. In one case there was hemiplegia some hours before death.

Results to mothers: Recoveries, 27 per cent.; death from all causes, 7 or 21 per cent.; death from eclampsia, 6 or 18 per cent. One died from sepsis on seventeenth puerperal day, when she had practically recovered from eclampsia.

Results to infants: 34 infants born.

Number lived and did well, 20 or 59 per cent.; still born, 10 or 29 per cent.; lived less than 24 hours, 4 or 12 per cent.; undelivered, 1 or 3 per cent. Of those that were still born or died, 14 in all.

Deaths due to toxemia in 10 or 71 per cent.; deaths due to operation in 2 or 14.5 per cent.; deaths due to prematurity in 2 or 14.5 per cent.

TOXEMIA OF PREGNANCY.

Under this heading, only the very severe cases were recorded. There were a number of cases which have not been included in this list on account of the absence of marked symptoms and the

disappearance of these following low diet and eliminative measures.

Number of severe toxemias, 10.

This does not properly represent the number of cases of toxemia that occurred in 3,400 confinements. The reason for the small number is that only recently have such cases been recognized and recorded as such.

Color.—White, 8 or 80 per cent.; black, 2 or 20 per cent.

Age.—Youngest, 16; oldest, 38; average, 27.

Primiparæ, 8 or 80 per cent.; multiparæ, 2 or 20 per cent.; married, 4 or 40 per cent.; single, 6 or 60 per cent.

Period of pregnancy, 25th week to full term. Interrupted the pregnancy in 7 or 70 per cent. In three (3) cases labor began naturally, but was hastened on account of symptoms.

Artificial delivery in 7 or 70 per cent.; "accouchement forcé," 5 or 50 per cent.

Method of performing accouchement forcé: Manual (Harris), 2; Champetier De Ribes Balloon, 2; Bossi dilator, 2.

Delivery with forceps in 2; by version in 5; natural but hastened, 3.

Of the seven (7) cases which were interrupted, the condition at time of interference was good in 1 or 14 per cent.; fair in 3 or 42.5 per cent.; bad in 3 or 42.5 per cent.

Venesection practised in none.

Bleeding from relaxed uterus and lacerations in cervix in 6.

Large bleeding rendering venesection unnecessary in 4 or 40 per cent.

Medium loss from same cause, 2 or 20 per cent.

Normal amount of blood lost in 4 or 40 per cent.

Veratrum viride used in none.

Complications.—Nephritis: Acute, 9 or 90 per cent.; chronic, with acute exacerbation, 1 or 10 per cent.

Function of kidneys impaired in 8 or 80 per cent.; not impaired in 2 or 20 per cent.

Blindness (total) and sight not regained for two years in 1; blindness (partial), sight restored in three months in 1.

Jaundice, marked, 1; mild, 1.

Albumen present in 10 or 100 per cent.; maximum amount, 3.5 per cent.; minimum amount, trace.

Urea diminished in 9 or 90 per cent.; normal in 1 or 10 per cent. The latter case was the least severe.

Minimum amount of urea, 1.83 grms. in 23 hours.

In general these figures are the same as those presented in other statistics, and only substantiate what has been already said. In a few particulars, however, there are differences, which will be of interest. It has been noticed above that 64 per cent. of the cases occurred in colored women, which can be accounted for by the fact that a greater number of this race are treated in our clinic. The color seems to play no part, as the disease attacks one as often as another. Concerning the time of its occurrence there is considerable difference of opinion, as is shown by the following statistics, thus:

	ANTE-PARTUM. PER CENT.	INTRA-PARTUM. PER CENT.	POST-PARTUM. PER CENT.
Olshausen.....	40	46	14
Greene.....	36	22	42
Knapp.....	24.5	60	14.6
Author.....	42	27	31

In the author's cases it is seen that a large number occurred during pregnancy. Most of the statistics agree that the larger number of cases occur during labor, which can be accounted for very probably from the fact that labor is brought on by the convulsions, the uterus sharing in the contractions of the other muscles of the body. In many cases the patient is not seen until after the occurrence of several convulsions, at which time, on account of the violent uterine contractions, stimulated by the general muscular activity, labor has progressed so far that it is thought to have been in progress a longer time than is really the case. According to the general rule, the convulsions ceased after delivery, in a number of cases, and in a number of those in which they were not stopped entirely, they were less severe. Apart from those cases which occurred post-partum, there were only 6 per cent. which were not improved, following the emptying of the uterus. In this connection, however, there was one case which was somewhat different from the general rule. It is generally stated that the convulsions cease sooner or later, following the death of the fetus in utero, even when it remains. In case twenty-six (26) of this series, the fetus had been dead, as well as could be ascertained, seven days or more, when the convulsions began. This estimate was made from the history given by the patient and the macerated condition of the fetus

when delivered. No history of syphilis could be obtained, nor could any physical signs in the mother or fetus be recognized, so it is reasonably certain that the death of the fetus was due directly to the toxemia, not a sufficient amount of the poison having accumulated, or not having accumulated rapidly enough to cause the convulsions sooner. In case No. 9 of the toxemia series, there was somewhat the same state of affairs. This woman, when about seven months pregnant, had very acute symptoms of toxemia. Edema of lower extremities had been present for about ten days when severe headache, very marked visual disturbances, considerable nervousness and acute edema of face and hands appeared. Examination of the urine showed albumen (small amount), high color, very few granular and hyaline casts. The kidneys were diseased, but not to any extent impaired in their function. She was given a hypodermic of morphia $\frac{1}{4}$ gr. for her immediate condition, strict milk and water diet, purged freely with magnesia sulphat, and given the bromides to take when nervous. There was temporary improvement, followed by a condition worse than at first, which became so bad that it was not thought safe to allow the pregnancy to continue. She was anesthetized with chloroform, cervix dilated with the Bossi dilator, and uterus emptied by version and extraction. When first seen the fetus was alive. When delivered it was dead, and gave evidence of having been dead at least one week; but even with the fetus dead in utero and being under treatment, her symptoms were getting worse all the time. A similar case is reported by "Meyer-Wirtz (*Zentralblatt f. Gynäcologie*, Band 71, Heft 1, 1904), in which the fetus had been three weeks dead in utero, when the convulsions came on. These cases add strength to the theory that the auto-intoxication originates in the maternal, rather than the fetal organism, about which more will be said later.

In regard to the pulse, there seem to be two classes of cases, one with a comparatively slow, the other with a rapid pulse; or, as they have been classified above, those cases with pulse below and those with pulse above 100 beats to the minute, the latter occurring with much greater frequency. The cause of this condition is difficult to fathom as, apparently, one is as profoundly toxic as the other. In the case of the slow pulse, however, the prognosis seems much better, which would seem to point to a less profound toxemia in *this class of cases*. The most constant monitory symptoms were the gastric disturbances and the characteristic severe frontal headache, these symptoms making

their appearance in some cases slowly, and in others suddenly. Other symptoms of importance which warn us of an impending attack are, acute edema of face and hands, and the more rapidly this edema appears, the more dangerous are the symptoms; visual disturbances varying from a condition in which the patient notices specks floating before the eyes and slight loss of vision to partial or total blindness. This condition is due to albuminuric retinitis, and is only temporary. In one of my cases, the sight was not fully restored until two years after the attack. This is an unusual condition, most of the cases clearing up rapidly as convalescence is established. As the poison accumulates, its action on the nerve centers is manifested by an unstable condition of that system, much excitement and depression and twitching of the various muscles. Sometimes a short while before the attack the patient will lie in a semi-stupor and the only unusual manifestation will be the jerking of the muscles, especially of the hands and face. In some cases the patient will complain of pains in the epigastric region and a tightness around the abdomen, as if a rope were being pulled around it.

The statement that eclampsia is a disease that, without any warning, flashes out like lightning from a clear sky, is certainly not in accord with my own experience. In every one of our cases, premonitory symptoms were present, to such an extent in some, that we were able to anticipate the attack and prevent its occurrence, in others the convulsions came on after interference had been decided upon, but before it could be put into effect. To the laymen and those not familiar with the symptoms, the disease does appear suddenly, but I believe there are symptoms premonitory to every case of eclampsia and these can be recognized in the majority of instances early enough to prevent the convulsions, by immediate treatment; or, if they cannot be prevented, we can interfere many times early enough to save both mother and child. It is not reasonable to suppose that a poison strong enough to cause such terrible convulsions as are seen in this disease, can accumulate in the body without presenting any symptoms until the outbreak occurs. It is certainly true that the formation of the poison is apparently very rapid in some cases, but that the convulsions occur without any warning at all of a toxic condition, is not in accord with my experience. In considering the diagnosis, most of the text-books pass it by with a few words, stating that it is made without difficulty. After the woman has had convulsions, of course the diagnosis is comparatively simple, but it should be made sooner, and it is in this early recog-

nitition that we can hope for better results. That eclampsia is a preventable disease in all cases, is hardly possible, but that it is a preventable disease in the majority of cases, I firmly believe. As has been mentioned above, all of our cases presented more or less characteristic symptoms before the occurrence of the convulsions. The diagnosis is made by these symptoms, all of which have been mentioned before, and a thorough examination of the urine. The results of urinary examinations are not always satisfactory and are sometimes misleading. In the first place these changes do not always occur, as in two of the above cases the

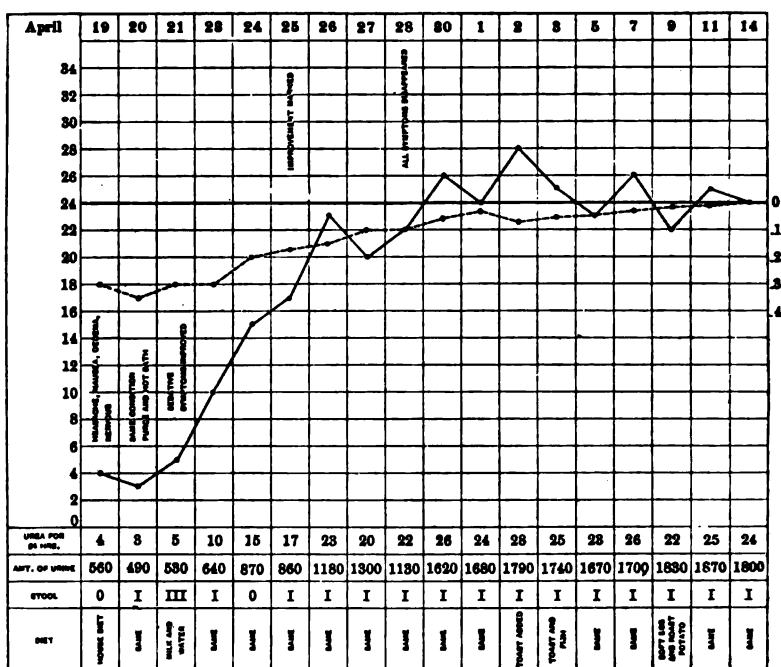


Chart I.—Toxemia of Pregnancy. Solid line represents Urea in grammes. Dotted line represents Albumin.

urine was normal until after the convulsions occurred; and in the second place, it may be abnormal and still no convulsions occur. These cases are very exceptional however, and it can be accepted as a general fact that some time before an outbreak (in some cases for weeks, in others for days, or it may be hours), the urine will be diminished in amount, highly colored, contain albumen in larger or smaller quantities, casts, and a diminished amount of urea.

While experimenting in a series of cases, concerning the value of the quantitative estimation of urea, two cases in the hospital at the same time thoroughly demonstrated that this sign, like most others in connection with this disease, should not always be relied upon. Both patients were on regular house diet. No. 1 was secreting 1.8 grms. of urea in the twenty-four hours, and No. 2 was secreting 20 grms. of urea in twenty-four hours. No. 1 had no symptoms of eclampsia; No. 2 had eclampsia. These cases, however, are exceptions; as a rule the urea will be diminished. These urinary changes, when present, with the clinical symptoms mentioned above, mean that an attack is near at hand. Nausea and vomiting, frontal headache with disturbance of vision, especially when accompanied by changes in the urine, should be looked upon with dread and at once a careful investigation of the case made. Many of the cases diagnosed as hyperemesis gravidarum from reflex causes and treated with various drugs and local applications to the cervix, etc., are in the author's opinion the "Toxemia of Pregnancy," with slow accumulation of poison. The inability of these patients to retain food is no doubt the cause of saving many lives, in that a minimum amount of poison is taken in, allowing time for that already present to be eliminated. When the patient is not in the hospital, or when she cannot be seen frequently, it is my custom to give her printed slips, specifying these important symptoms, and cautioning her to notify me at once if they appear.

In connection with the diagnosis, it may prove interesting and profitable to mention the blood pressure and its relation to this disease. Krönig (*Experimentelle Untersuchungen zur Aetiology der Eklampsie*; verb d. deutsch, Gesellschaft f. Gyn., 1901), after experiments with the sphygmometer of Riva-Roci, has found that eclampsia is accompanied by a very high blood pressure, which seems to be higher in those cases occurring post-partum. This elevation, Krönig thinks, may be due to either of two causes—increase in quality of blood in this disease, or through vasomotor influence. This has been confirmed by Dr. Hubert Richardson (*American Medicine*, Vol. VI, No. 11, pp. 441-442, Sept. 12, 1903), who at the suggestion of Dr. Chas. G. Hill of Baltimore, in whose practice the case occurred, estimated the blood pressure, which was as follows:

$$\frac{\text{Mean, 168 m.m. Hg.}}{\text{Maximum, 208 m.m. Hg.}} = 0.8.$$

The exact estimation of the blood pressure is not a very practical means of diagnosis, as an instrument is not always at hand and only a comparatively few are able, even when it is at hand, to make use of it, as it is necessary to have had long practice before results are of any value. As Dr. Richardson says, the estimation of blood pressure by means of the finger on the pulse is in many cases a valuable aid, but does not give scientifically accurate results. The terms hard, soft, high and low tension, high and low pressure, are not definite and do not admit of exact records for comparison. Like the other senses, touch has its limitations, and the terms used are relative though of clinical value. Dr. Oliver, of London, has repeatedly proved, by the conjoint use of the hemodynamometer and the arteriometer, that the finger touch is very frequently at fault in estimating the arterial blood pressure, and that the cause of this tactile illusion is a reduction in the calibre of the radial artery. He has found radial arteries of little more than half their normal calibre, having a mean pressure of 160 to 200 m.m. Hg., which were passed by well-trained fingers as not presenting an exceptionally high blood pressure. It is always well, however, in these cases to note carefully the condition of the pulse, and in many cases will it aid in the diagnosis. The "Prognosis" in eclampsia is always grave, and in a given case it is impossible to say what the outcome will be. Statistics vary to such an extent that it is difficult to arrive at any exact results. So much depends upon the individual attention to these cases that naturally different physicians have had varying results. Thus Stroganhoff reports a series of 113 cases with a mortality of 5.31 per cent., whereas Olshausen had a mortality of 25 per cent. In the author's series of cases of 33 active eclampsias and 10 severe toxemias, which it is reasonable to suppose would have developed the disease had they been allowed to continue, there were 6 deaths, or a mortality of 18 per cent. in the first series. One of these cases was complicated by a contracted pelvis which necessitated a Cesarean section, and which may have had something to do with the death, and in another the death was most probably due to the ignorant use of *veratrum viride*. In the second series—toxemia—there was not a single death. From the pathological studies that have been made it is certain that not all of the patients can be saved. Thus I have removed a liver from a woman dead of eclampsia, which was necrotic through its entire area, and absolutely unable to perform its functions. But this is a comparatively rare condition, and from our experience I believe the mor-

tality should be 15 per cent. or under. The claim by some that a greater mortality occurs in primiparous than in multiparous women has not been noticed in our cases. The disease occurs, as has been seen, more frequently in primiparæ, and of course a greater number die, but the difference noted by some observers is probably more apparent than real. The time of occurrence of the convulsions has some effect upon the result, but I am inclined to believe that the virulency and amount of the poison present has more to do with it. Of course, when the convulsions occur before labor has begun the delivery is accomplished with greater difficulty, and for this reason the life of the patient is in more danger, but the cases that occur post-partum are sometimes very virulent, as in one of our cases it seemed impossible to produce any effect upon the convulsions, and they continued with great severity and rapidity, until the patient died in a comparatively short time. Of the six deaths in the above series, two, or 33 per cent., were of the post-partum variety. It may be said in general that the gravity of the case increases with each convulsion, but it is impossible to name any definite number that will kill. That recovery never takes place after the occurrence of eighteen or twenty convulsions, as has been stated, is not in accord with our results. Thus, three of our patients recovered after having had twenty-seven, twenty-four and eighteen convulsions respectively.

Before going into the consideration of the treatment, a brief resume of the pathology will be gone over, and a comparison of our results with those of other observers.

PATHOLOGY.

From the time that Lever (Guy's Hosp. Reports, 1843) observed albumen in the urine of eclamptics, naturally the attention of the clinician and anatomist was directed towards the kidneys, and as a result various lesions of these organs were described. For a long time these were the only constant findings in cases dead of eclampsia. The urine not being examined until after occurrence of the convulsions (at which time it generally contains albumen in greater or less amounts), it was a very natural conclusion. Later, more careful examinations were made, and as a result of these and for reasons that will be given hereafter, this view was gradually abandoned. More recently has attention been directed to other organs, especially the liver. From time to time pathological changes were observed, but were given especial

prominence by the work of Jurgens (*Berliner Clin. Wochenschrift*, 1886) and confirmed later by Klebs (*Zeigler's Beitrage Zur Pathol. Anatomie*, Bd. 11). These observations excited little attention until Pilliet, basing his opinion upon findings in 22 cases of eclampsia, declared his belief that these alterations in the liver were constant and played an important role in the pathology of the disease. He found the changes in the liver to consist not only of simple hemorrhages, but also of more or less diffuse necrotic areas, which condition was noted by Lubarsch and Prutz. Probably the most careful and exhaustive work given us on this subject was by Schmorl, whose work is based upon the post-mortem findings in 17 cases, in none of which were the liver changes absent.

He therefore agrees with Pilliet in regarding such changes as constant. The pathological changes in the liver might be divided into two classes of necroses; the one hemorrhagic, the other anemic, both, according to Schmorl, being stages of the same process of degeneration. As a rule, these changes are sufficiently plain to be detected with the naked eye. The hemorrhagic form seems to be the most common; the liver is but little or not at all enlarged, the tension of organ is increased and edema is present. Both upon the intact as well as cut surface appear more or less numerous red streaks and spots of different size. In most cases the liver substance is brown-red in color. There are more or less freely distributed brownish-yellow patches of the size of a millet seed to that of split pea. These changes are scattered throughout the whole organ. A somewhat different picture is presented by those livers in which the anemic form of necrosis predominates. Here the size and consistency of the organ is same as above, but distributed over the surface are grayish-white patches from the size of a millet seed to a ten-cent piece. They are most frequently observed on the free border of the liver, or where the ligaments are attached to the organ, but are not entirely absent over the remaining surface. There is also seen upon the surface of the liver more or less numerous red spots and streaks like those above described in the hemorrhagic form. Microscopically both present characteristic appearances. In the hemorrhagic necroses, the hemorrhage occurs in the connective tissue about the portal vessels bordering close on the acini. Capillary walls are distended and broken, and the blood extravasated between the liver cells, which are thus set free in the blood current. Schmorl agrees with Klebs in con-

sidering this condition to be brought about by a gradual slowing of the circulation in these areas. In the fresh hemorrhagic, spots are found free, liver cells with nuclei staining feebly, or not at all. The anemic necroses resembles the anemic infarcts of the spleen and kidney. In fresh specimens, the liver tissue adjacent to the necrosis was intact, but the liver cells were swollen, the protoplasm stained poorly with eosin, the nuclei were entirely lost or granular and shrunken; another condition was a diffuse thrombosis in the portal vessels, usually affecting the smaller veins and capillaries. Schmorl considers the thrombosis as primary and the necroses as secondary. In our cases there was no change in the bile ducts, but some observers have noted bile stasis, especially in those cases which are complicated by icterus. In these cases the liver is said to resemble, microscopically, that of acute yellow atrophy, except there is no marked diminution in size. Microscopically the difference is great. The presence of icterus in eclamptic livers is explained by Schmorl as follows:

1. By compression of small bile ducts and consequent bile stasis, from the hemorrhagic extravasation.
2. By the liver cells being so disturbed in the hemorrhagic areas, as to secrete bile directly into the blood current.
3. By thrombosis in the interlobular veins with consequent lessening of pressure in the portal capillary system, which causes increased tendency to resorption of bile.

Inasmuch as in the non-icteric cases of eclampsia, bile has been found in the urine, Schmorl is of the opinion that here the disease has run its fatal course so rapidly that bile has not been absorbed in sufficient quantity to be manifested as icterus.

The entrance of liver cells in the blood stream has been previously observed by Jurgens, both in the blood of the heart and that of the lungs, in cases of marked fatty degeneration of the liver.

KIDNEY.

The changes in the kidney are usually those of acute parenchymatous nephritis, with very marked fatty degeneration of the kidney cells, which latter is probably due to prolonged chloroform narcosis. As substantiating this view, none has been seen in those cases treated by morphia alone. Other conditions in the kidney are calcareous degeneration of the epithelium in the glomeruli and Henle's tubes; thrombosis of blood vessels more

or less marked and consequent stasis; the interstitial tissue is usually normal, sometimes edematous, or the seat of round-cell infiltration; fibrinous and hyaline casts in the tubules.

LUNGS.

In the lungs are found diffuse lobular pneumonia, especially in the lower lobes: small hemorrhagic extravasations in the pulmonary parenchyma or under the visceral pleura, hemorrhagic infarcts, and in some cases a similar picture to that of first stage of croupous pneumonia. The same thrombotic condition was noted here as in the liver, affecting the large as well as small blood vessels. In the pulmonary capillaries were seen the giant cells (masses of cyncytium), which Schmorl formerly believed to be the origin of the thrombotic processes in the various organs, but which have since been shown by Pels-Leusden, Veit and others to be of normal occurrence. In the heart, degenerative processes in the myocardium were constant. These processes varied from an albuminous clouding of the muscle fibers, to a marked fatty degeneration, most probably referable to the prolonged administration of chloroform. Hemorrhagic extravasation between and hyaline degeneration of the muscle fibers, together with thrombosis of the smallest arterioles were found. The spleen is usually of normal size, except in those cases complicated by inflammatory processes in the lungs or generative organs. Both stomach and intestine are normal except here and there hemorrhagic extravasations and erosions like those pointed out by Langerhans. In my cases there was no examination made of the central nervous system, but other observers have found multiple hemorrhages in the white and gray matter and central ganglia, less frequently in the white matter of the cord. The same general condition of dilated capillaries, embolic formations, hemorrhages, etc., were observed here as in the liver and spleen. In the post-mortem examinations of the organs of infants born of eclamptic women, are seen sub-pleural, and sub-pericardial hemorrhages, as also hemorrhagic extravasations in liver and kidneys. No necrosis was noticed in specimens examined by me, but Schmorl noticed in one of his cases hemorrhagic necroses and hyaline thromboses as in the mother's liver.

A rather significant feature afforded by the result of the examinations of the fetal organs and well demonstrated in my cases, is that the changes in these are not nearly so far advanced as

are those in the maternal organs; as was stated above, the changes in the liver and kidneys were only those of extreme congestion not resulting in either case in necrosis. This would lead us to believe that the changes in the fetal organs were secondary to those in the mother, and still further strengthen the theory of maternal, rather than fetal origin. From the examination of the pathological processes in this disease, it is evident that the post-mortem findings are tolerably constant, and that they consist of necroses and hemorrhages in the parenchymatous organs on the one hand, and multiple thromboses in the blood vessels on the other. When we seek explanation of these pathological changes, it is at once evident that the similarity of the lesions in the various organs would indicate a common cause. Thus far, however, no theory of the cause of eclampsia advanced can explain the occurrence of these lesions.

THEORIES AS TO CAUSES.

As has been said before, eclampsia has been for a long time identified with uremia and kidney disease, and while the association is undoubtedly of very frequent occurrence, the relation between them as cause and effect can no longer be held as the true one. It has been found that only a small proportion of women, suffering from chronic nephritis had eclampsia, and that the urine did not necessarily contain albumen at the time of the eclamptic attack, Schroeder, Ingerslen and Charpentier having collected respectively 62, 112 and 143 such cases from the literature.

Prutz found kidney changes in all but 7 out of 368 cases collected from the literature, in which the description was sufficiently accurate to be of value. He considered, however, that in many cases the changes were too insignificant to mean a great deal, and that it was questionable whether they were not secondary. Bauffe de Saint Blais, in 40 cases, concluded that the kidneys are often perfectly normal and many of the changes when present are secondary.

Guenard and Potocki demonstrated the permeability of the kidneys with methylene blue, and concluded that the renal function was not markedly impaired even though anatomical lesions might be present. Only 7 per cent. of the author's cases had suffered from chronic nephritis. Two of the cases had no nephritis at the time of the attack, but did have soon after, the disease being the result of the toxemia instead of the cause. In 64 per cent. of the

cases the function of the kidneys was seriously impaired and, when these great eliminators are diseased, naturally the outlook is much more grave. With the number of cases in which the kidneys are normal up to the time of the attack, it is reasonable to believe that these organs can be eliminated as causal factors, although when diseased they may aggravate the condition very much.

Eclampsia has been thought to be due to a disorder of the nervous system (V. Herff, *Experimentelle Beiträge zur Pathogenese der Eklampsie, Verhandeln der Deutsch Gesellschaft f. Gyn.*, 1901).

It is a fact that during pregnancy the nervous system is in a condition of far less stable equilibrium than at other times. Thus Blumreich and Zuntz applied pulverized creatinin to the cerebral cortex of pregnant animals, and proved that convulsions were much easier produced than in the non-pregnant animals. It is difficult to suppose that any special condition of the nervous system would cause eclampsia without the presence of some other cause. Another argument against this theory is the fact that the disease occurs as often in the colored race, in whom the nervous development is much below that of the white. In 1870 Spiegelberg announced the fact that the presence of ammonium carbonate circulating in the blood was the cause, but chemical analysis has failed to bear him out. The theory of Traube-Rosenstein—a condition of anemia and edema of the brain—has not been demonstrated at autopsies in all cases.

An increase of Leucomaines in the blood, has been observed by Messen. An increase in globulin in the blood serum by Kallmon. The "Rappart Azoturique"—the relation between the total nitrogen of the urine and the amount eliminated as urea has been discussed by Halloin. All of these theories have at various times been advanced, but have not been supported by chemical examination.

Fehling and Dienst believe in the intoxication with the products of fetal metabolism, the maternal organism being sometimes unable to accommodate itself to the increased work necessary for their elimination, as well as that of its own excretory products. They support this theory by clinical experience, *i.e.*, the cessation of the convulsions after the death of the fetus in utero. But as argument against this, is the report of the cases above,—two in my own series and one by Meyer-Wirtz. Again as has been stated above, the pathological changes in the fetus are less

marked, being only those of congestion instead of the further change of necrosis. It has been lately demonstrated by Baron and Castaigne that the transmission to the mother of substances injected into the fetus, ceases almost immediately after its death. It would seem from this, if the poison originates in the fetus, that it would be impossible for convulsions to occur after the fetus died, especially so late as three weeks, as occurred in the case of Meyer-Wirtz. Nor is this theory consistent with the fact that the disease attacks primiparæ so much more frequently than multiparæ; or that the same woman seldom has but one attack. Thus, Olshausen, in 200 cases of eclampsia, only saw two such cases, and Meyer-Wirtz, in 117, saw the same number. In my cases there was one who thought she had had an attack, but was not certain. As further proof of this fact, Hitchman reports a case from Schauta's clinic (*Zentralblatt für Gynakologie*, XXVIII. No. 36), which he believes is a very strong argument against the theory that eclampsia is due to toxins from the fetus. The patient, a II-para, was seen at the second week of the fourth month. The size of the uterus corresponded to the seventh month, and on account of 7 per 1,000 albumen in the urine, the patient was kept in bed on a strict milk diet. Labor commenced soon after, and the next day two very severe eclamptic attacks were observed with complete loss of consciousness. Under Schleich narcosis the patient was delivered. Not a trace of normal placenta could be discovered in the hydatid mole which filled the uterus, and the fetus—if there had been any formation of one—must have perished at a very early stage. From this case Hitchman concludes that the peripheral parts of the fetal ovum are probably the source of the toxin generation, as the villi were of unusual size and development, the epithelium itself proliferating. He states that Veit's theory of deportation of villi is superfluous in the presence of such a case. All of these facts taken together would seem to point with a fair degree of certainty to eclampsia as a disease with its origin somewhere in the maternal organism.

The explanation of Klebs, that the lesions of the liver were due to convulsions, was refuted by the observations of Virchow, who demonstrated that such lesions do not occur from convulsions in any other disease than eclampsia. The theory of the bacterial origin of eclampsia is not so easily disposed of. As yet no single organism has been isolated in all cases, although certain ones have been observed in a few, but the pathological lesions would be more general in case of bacterial infection. Extremely

interesting work in this connection has been done by Blanc, Doleris and others, but as yet it remains unproven. The theory of auto-intoxication of maternal origin, was first brought out by Rievie in 1888, who thought it was the result of the heaping up of some substance in the system during pregnancy, holding that its presence was indicated by an increase in the toxicity of the blood serum and a decrease in the toxicity of the urine. This was confirmed by Chambrelent and Tarnier and their students, who showed that in a number of cases the urine of women suffering from eclampsia, or just about to be attacked by it, when injected into animals was far less toxic than usual, while the toxicity of the blood serum was markedly increased. They concluded, therefore, that some poisonous substance which should have been excreted by the kidneys, was accumulating in the system and thereby increasing the toxicity of the blood serum, which in turn gave rise to the re. ¹ and hepatic lesions which still further accentuated the conditions. This was also confirmed by Ludwig and Savor, who considered the offending product to be carbamic acid, which they believed was formed as a result of imperfect metabolism, especially in the liver. It is very probable that the main feature of the disease is an alteration in the function of the liver, which fails to render innocuous certain poisonous products of metabolism, during their passage through it, and that these in turn give rise to an auto-intoxication, which may be called "Hepato Toxemia." That the disease is caused by a poison, there is hardly a doubt, but what that poison is, remains to be proven. The pathological findings have been extremely interesting and instructive, but I am inclined to the belief that whatever shall be discovered of the offending toxin, will be in the laboratory of the physiological chemist, rather than that of the pathologist. Since the treatment has been based upon the above supposition, the best results have been obtained.

Treatment.—The treatment resolves itself into prophylactic and curative. The prophylactic or preventative treatment is by far the most important, as it is by close observation of the patient during pregnancy and recognition of the early symptoms that we are able in many instances to ward off the attack entirely. When a physician is engaged to attend an obstetrical case, he should consider that woman his patient from that time on, and watch over her carefully. See that she attends regularly to her bowels, gets plenty of fresh air and sunlight, and has sufficient occupation for

body and mind, examine the urine frequently during the last three months, and caution her to notify him immediately upon the appearance of any unusual symptoms, specifying, headache, gastric and visual disturbances, and edema especially about the face and hands. This may seem an unnecessary warning as it has been sounded so often, but in many instances it has fallen upon deaf ears. It has been my experience, as no doubt it has been that of all others who practice obstetrics to any extent, that the general practitioner does not observe these details as he should. He considers pregnancy and labor physiological conditions, which will take care of themselves, and while this is true generally speaking, there are exceptional cases, and it is for these that we must be on the lookout. It is not far from a true statement to say that the average woman is not seen by her physician until she is well advanced in labor, in which case, if any abnormal condition has existed, it is often too late to correct it. There is no more alive or interesting condition in obstetrics to-day than the "toxemia of pregnancy." This condition, coming on slowly in some cases and rapidly in others, manifesting itself by the symptoms given above and usually accompanied by urinary changes, I believe is always present and recognizable and it is in this fact that we can hope to save many lives in the future. As soon as this condition is recognized, the patient should be put upon an exclusive diet of *milk* and *water*, with special emphasis upon the latter. As a general rule a patient looks upon milk as a starvation diet, and when water is suggested, is apt to take it as a joke. For that reason it is my custom to have the nurse give the water at regular and frequent intervals, as if it were medicine, otherwise she will not get it. There is no better diuretic or diaphoretic. It holds the solid materials in solution, and enables them to pass and repass through the animal tissues, and in this way washes out the whole system. Beside the diet, an active purge should be given immediately to cleanse the intestinal tract, and if any nervous symptoms be present, a sufficient sedative to control these, usually better given by rectum on account of the unstable condition of the stomach. The patient is put in a warm bath once or twice a day, to encourage the action of the skin, and is watched closely, daily examinations of the urine (qualitative and quantitative) being made. If with this treatment, no improvement is noticed (unless it be temporary), but the clinical symptoms become more apparent, the albumen if present increases in amount, and the amount of urea diminishes, it is time for interference. Such a case should

not be put off in the hope of saving the life of the unborn child. It is better to be fairly certain of saving the life of the mother even if the child is lost, than to run a great risk of losing both. The method of delivery in such cases differs according to the various operators, and depends upon whether the case is one which demands immediate interference, or whether it can be put off a short time. The question of induction of premature labor is a serious one, and even when done carefully and conservatively, is attended often with serious results. The simplest of the methods advised for this,—the introduction of a sterile bougie into the uterus (Krause's),—is uncertain and very slow. In some cases the uterus is so inert, that the introduction of the bougie has no effect at all. Personally, my experience with this method is very limited, only having used it in one case, and that with such poor success, that other methods were necessary to accomplish the desired result. In all of our cases the indications were for immediate action, and in such cases it is not practical. The next most conservative method is the introduction of some of the dilating bags, the most preferable of these according to our experience, being the "Champetier de Ribes." Needless to say, before this bag can be introduced, there must be a certain amount of cervical *dilatation*. In multiparous women this amount of dilation is usually present, and when not so, is easily effected with one or the other of the cervical dilators. In primiparous women, however, it is usually necessary to dilate artificially, a diameter of 3 cm. being all that is required, and this can be accomplished in most cases with rapidity and ease. This having been accomplished, the bag is folded in as small a bundle as possible and with a forceps made especially for the purpose, is introduced into the lower uterine segment. The stop-cock is opened and about 500 c.c. of sterile water is forced into it, the stop-cock again closed, a weight, from 1 to 5 pounds, depending upon the haste required in the special case, is attached to it and swung over the foot of the bed. It is well to add to the traction exerted by the weight, at intervals, traction with the hand, which will effect the dilation much more rapidly. While the dilation is proceeding, everything should be gotten in readiness for the delivery, which should be completed as soon as possible after the expulsion of the bag. A cervix dilated artificially does not remain open as does a cervix dilated naturally on account of the absence of the physiological softening and loss of the cohesive power of the tissue. For that reason the delivery should be completed as soon after expulsion of the

bag as possible. If the symptoms are so serious that great haste is necessary to prevent the occurrence of convulsions, then we must think of more active accouchement forcé, and the best method of effecting it. The metallic dilator of Bossi, about which a great deal has been written in the last few years, seems to have given good results, but with such great risk that I cannot consider it a among them Leopold, who reports a series of 17 cases. He concluded that it is a most valuable instrument. In only two of our cases was this dilator used, and then with fairly good results, but I was fortunate enough to be present in Leopold's clinic at the time he was conducting his experiments with the instrument and, while no accurate account of the cases was kept by me, in a very few instances which I saw was the dilation completed with the instrument but, after partial dilation with it the Champetier de Ribes balloon was introduced and the dilation completed by that means. Bossi claims that it is the most rapid means of dilating the cervix, but up to a certain limit of time, rapidly is not an advantage, as there are several methods by which it can be dilated rapidly. It is not alone the rapidity which must be considered, but the preservation, as much as possible, of the tissue, and only such rapidity is justifiable as is consistent with this result. There is no method which can be used to dilate the average cervix in 7 minutes, which will not cause a laceration. The Bossi dilator may be used with good results by many operators, but my experience teaches me that as a rule the hand which is sensitive and able to recognize at once when the tissues will give way, will accomplish the result with less injury than any instrument. The best method of using the hand is the one advised by P. Harris, which only requires that the cervix be dilated sufficiently to allow passage of one finger, after which the thumb is passed in, then two fingers and thumb, three fingers, until finally the whole hand is introduced. In only a very few instances will this method fail. Personally I have never failed where I persisted. The deep cervical incisions as recommended by Dürrssen (*Vaginal Keiserschnitt*) were employed in three of the above series with fairly good results in the hands of the originator and of a few others, justifiable procedure. In all of the three cases the hemorrhage was so great that there was not sufficient time to sew up the incisions made deeper by the delivery, and tamponing of uterus and vagina was necessary. In addition to the hemorrhage is the danger of the incisions being extended up into the lower uterine segment during the delivery, and even when this does not occur, there

is great danger of infection from these incisions. Where it is possible to dilate with the hand, and any cutting is necessary, I should much prefer the Cesarean section by the abdominal route.

Besides the methods already considered might be mentioned the mechanical devices advised by Busch and others; the bi-manual methods of dilation as recommended by Edgar and Bonnaire, and the dilation by means of the hand shaped as a cone. Very rarely may the cervix resist all effort at dilation, in which case, under favorable conditions, Cesarean section might be resorted to. The treatment following delivery in these cases is the same as that following delivery in the cases of active eclampsia, and will be considered in that connection later on. *Curative* or management of the active attack: when the actual convulsion is going on, nothing can be done to modify its violence, or diminish its duration. All that can be done for the moment is to prevent injury to the tongue by the use of a mouth gag, or something inserted between the teeth, and to prevent falling from the bed or wherever the patient happens to be. It is a general custom to administer chloroform by inhalation during the attack, but if we pause a moment and remember that during the first part of the attack the muscles of the body are in tonic spasm, those of respiration along with the others, being stationary, none of the chloroform is inhaled, and this procedure is therefore attended with no result. When the convulsion is over and the long slow breathing begins, the patient is in need of all the oxygen possible on account of the amount of CO_2 accumulated during the tonic spasm; for those reasons chloroform during the attack is not indicated. Naturally, it is our first desire to prevent the occurrence of the convulsions, and the only means of accomplishing this permanently is the elimination of the active cause—the poison. This cannot be done in a moment, and indeed in some instances resists our effort for a long time. While this is being done we can diminish the strength and number of the convulsions by relaxing the muscular tension, and I believe the best means of doing this is by the administration of morphia, hypodermically, and in sufficient doses to accomplish the desired result. Women in such a condition are capable of taking large quantities, e. g., from gr. $\frac{1}{2}$ to gr. 1 at one dose, and more if necessary. It is said by those opposed to the use of morphia that it locks up the doors of elimination, but the only elimination of any importance that it affects is that of the intestinal track and, if we have a key in croton oil which promptly opens this door, why object to closing it temporarily. The effect that the use of morphia has on the

elimination by the kidneys and skin is of very little importance, as it diminishes the amount of urine practically none, and by equalizing the internal and external temperature at times may even increase the action of the skin. At the same time it diminishes the active bronchial secretion so often present in these cases. I would not advise the continued use of morphia because the sedative and relaxing effect obtained quickly by its use can be maintained with better results by the use of chloral and the bromides. These drugs should be administered per rectum in 3ss and ʒi doses respectively, and repeated as often and as long as sedative effect is desired. As a sedative and relaxor of the muscular system, morphia seems to be the best drug for immediate use, and I believe will be productive of good results. That it should be used to the exclusion of other things, as has been advised, is hardly practical. It does not treat the disease, it only aids in controlling one of the symptoms. The other sedative drugs, namely, chloral and the bromides, are valuable adjuncts to morphia, and should be used to continue the sedative effect produced by that drug.

Chloroform.—I am inclined to think that chloroform has a very limited field in the treatment of this disease. Its use during the convulsion has already been commented upon. As a sedative to relax the muscular system as an aid in preventing the convulsions, and for immediate use until the effect of morphia is produced, it is certainly of great value. But that it should be used ad libitum continuously for hours, and as a treatment (the so-called chloroform treatment) exclusive of other things is as unreasonable as any other *one* method of treatment. When used in this way it is capable of doing harm in increasing the already too profuse bronchial secretion and pulmonary edema, and causing still further embarrassment to the kidneys, which in the majority of cases are already eliminating far below the normal amount. Chloroform can be used in eclampsia for its immediate sedative effect, but always use as little as possible for the reasons just given.

Venesection.—From my experience, I have come to look upon blood letting as the most important part of the treatment of this disease. In the AMERICAN JOURNAL OF OBSTETRICS, Vol. XXXIX, 1899, I called attention to this subject particularly, and stated that blood letting should not be limited to the cases where the pulse was full and bounding, as was ordinarily advised, but was indicated in practically every case of eclampsia. This opinion has been more thoroughly fixed in my mind by every new case treated, until at the present time, with a knife in my hand, I feel that I can

almost defy the convulsions. A splendid demonstration of the efficacy of this plan of treatment was presented in a case of the above series. This was of the post-partum variety, and was very severe, the convulsions following one another in rapid succession. When the patient was first seen the pulse was 160 per minute and very tense, 500 c. c. of blood was withdrawn from the median basilic vein, after which the pulse dropped quickly to 70, the convulsions ceased, and the patient seemed in a fair way to continue doing well. In a few hours, however, the pulse began to increase in frequency and continued on up till it reached 150, the convulsions returning with the increase in frequency and tension of the pulse. The vein was again opened and 160 c. c. of blood withdrawn, with the result that the pulse again returned to between 70 and 80, no more convulsions occurred, and the patient made an uneventful recovery. After the first withdrawal of poison and reduction of blood pressure, there was marked improvement for a while, but it seemed to accumulate rapidly. The patient was given morphia in large doses at the same time, and no doubt it aided, but the improvement noted after each withdrawal of blood was so marked that it could be ascribed to nothing else. The rapidity and weakness of the heart is due to its depression by the accumulated poison and the removal of this poison relieves this organ of its embarrassment and allows it to act more normally. For these reasons it will be a very rare exception when blood letting will not be indicated. Since reporting the above case another has occurred which rather reflects discredit upon this method of treatment, and like most everything concerning eclampsia leaves one wondering more and more what kind of disease it really is. The case was that of a strong mulatto woman who came to Baltimore the evening of July 10th, and just after her arrival labor began. About 11 p. m. the case was seen by one of the house physicians, and the following history obtained: E. R. C., age 24, I-para, early history of no interest, normal pregnancy up to one week ago, since which time had suffered from severe headache, nausea and vomiting, with slight visual disturbances and swelling to such an extent as to interfere with locomotion; had not voided as much urine as usual. Physical examination: Woman very large, weighing over 200 pounds, edema general. Abdomen very large, palpation revealed a large fetal head not yet engaged, occiput to left and anterior. Measurement showed a "generally contracted" pelvis, for which the fetal head was much too large, and "Cesarean section" was decided upon. Patient was removed to the hospital and op-

erated upon immediately. After removal of child and placenta from the uterus it would not contract, although surrounded by hot towels, etc., and bled so profusely that infusion was necessary. After removal to the bed a second infusion was given, and after hot water bags were placed around the patient she perspired freely, and seemed in good condition. Urinary examination showed the presence of acute hemorrhagic nephritis, very small amount, less than 200 c. c. obtained, which coagulated solidly, and was loaded with blood, epithelial, granular and hyaline casts and blood cells. Patient did fairly well for nearly twenty-four hours, taking milk and water. At the end of this time she had six eclamptic convulsions with intervals of about three-quarters of an hour. A quarter of a grain of morphia was given, which seemed to quiet the convulsions. After several hours she could be roused sufficiently to take water or milk, but remained in this semi-coma for about twelve hours, when she had two more convulsions and died in the second. No autopsy could be obtained. This woman bled from the uterus to such an extent I became alarmed for fear that she would bleed to death on the table; she received a quantity of salt solution by infusion to take the place of the blood lost. In other words, she received what we have thought was the most approved method of treating eclampsia, and it seemed to have no effect upon the course of the disease. One should not conclude too much from a single case, but it is needless to say that my faith in this method of treatment received a severe shock. *Salt solution*, the use of which has become so general in recent years, is an important aid in the treatment of this disease and acts in the following way: It furnishes the necessary volume of fluid for the heart and blood vessels, the normal volume having been reduced by the blood letting. It dilutes the poison in the blood, which remains, in that way relieving the toxemia quicker than any other way. In diluting the poison and furnishing the necessary amount of fluid it stimulates the embarrassed heart and poisoned nerve centres. It is a most wonderful stimulant to the eliminating functions, especially the kidneys and skin, as has been demonstrated in some of our cases, e. g., in one case urine almost suppressed 200-300 c. c. in 24 hours, increased in three days to 3,000 c. c. with profuse perspiration. I would, however, warn against its promiscuous use, for it may do harm. It causes an elevation of the blood pressure, a result not desired, on account of the fact that the pressure is already high in this disease. There is no doubt in my mind that the careless and untimely use of salt solution in one or two of my

cases precipitated convulsions. The infusion should not be given until after the venesection, and then in amount indicated by the pulse and general condition of the patient. After the convulsions have been controlled and the patient seems in a fair way to recover, it is our custom to administer salt solution by enema 700 to 800 c. c., three times in 24 hours, and continue this until convalescence is thoroughly established. Used in this way it is absorbed slowly and will not cause a sudden elevation of blood pressure, and therefore not cause convulsions. As soon as possible we must cause elimination through the intestinal track, and the best means of accomplishing this is the administration of croton oil in one to two-drop doses with olive oil $\mathfrak{z}$ i to $\mathfrak{z}$ ii on the back of the tongue, which can be given while the patient is still unconscious. As soon as the patient is able to swallow she should be given magnesia sulphat $\mathfrak{z}$ ss in saturated solution every hour until free catharsis is established. It is after this free catharsis, when such quantities of the fluid have been withdrawn from the tissues, that salt solution should be given in large quantities.

Veratrum Viride.—The use of this drug, the American treatment as it is called, is very strongly advised by some authors, and as strongly condemned by others, so that it is difficult to conclude whether it is good or not. My experience with its use is limited to the eight cases of the above series, in four, or one-half, of which it seemed to prove beneficial; in three it had apparently no effect, and in one it seemed to do absolute harm, so much that I felt that the woman might have been saved had it not been used. From this limited experience, accompanied by results rather contradictory, I am unable to state my exact position in regard to the use of the drug, but it seems to me that the result claimed for it can be obtained better from venesection and infusion of salt solution, and until further proof is offered of its value I shall continue that line of treatment. The statement that convulsions do not occur with a pulse rate of sixty to the minute under *veratrum viride* is proven clinically to be false. In the country, where the physician cannot always have some one to help him, and the conditions are such that he cannot operate for some time, it is probably best to give *veratrum viride*. When a stimulant other than salt solution is necessary, nitroglycerine seems to give the best result, as it lowers blood pressure, and at the same time encourages diuresis and diaphoresis. Elimination through the skin by means of the "hot wet pack" has not given very good results in our cases, as it seems to cause too much depression. Quicker and more satisfactory diaphoresis

has been obtained by continuous intestinal irrigation with hot normal salt solution, which acts in several ways. The lower intestinal track is relieved of the fecal matter and a certain amount of poison carried off in this way; the heat from the salt solution is stimulating to a heart weakened in most instances by poison and loss of blood, and the skin is stimulated as much as is the case when the hot pack is used and with far less physical and psychical disturbance of the patient. The diet of milk and water, with possibly a little albumen water, is continued as long as the function of the kidneys is embarrassed, gradually returning to regular diet

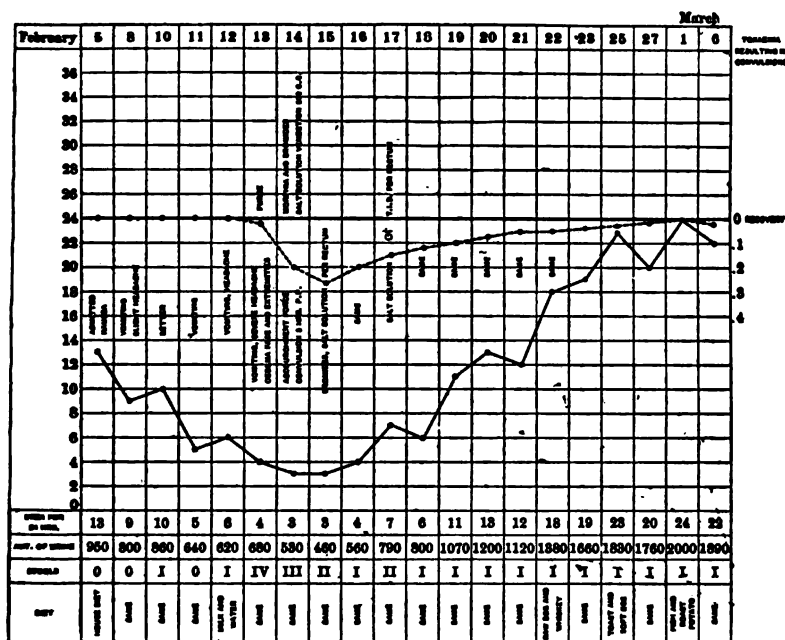


Chart II.—Eclampsia. Solid line represents Urea in grammes.
Dotted line represents Albumin.

as convalescence is thoroughly established. If the kidneys are much diseased, Basham's mixture will prove a valuable aid in effecting their recovery.

The Puerperal Period.—The fever accompanying the convulsions rises to a point ranging from 100° F. to 103, depending upon the number of convulsions and the virulence of the poison, continues for several days, gradually returning to normal on third to the fifth day, provided there is no infection complicating (Chart). Of course, owing to the operative manipulations so often necessary in these cases, resulting in lacerations and bruises of the

cervix and perineum, and added to this the lowered resisting power of the patient, infections of varying virulency very frequently follow, and these should not be mistaken for the fever caused by the eclampsia toxin. Without any infection the convalescence does not extend over a much longer period than that following a normal confinement. Involution of the uterus occurs normally, and in many cases, owing to the very powerful uterine contractions which occur in this disease, it is more rapid than usual. Puerperal insanity is an occasional sequel to this disease and occurred in one of the above series. This was a young primiparous woman with good family and early history. She became very violently insane, soon after the coma passed off, and this condition continued for six days, after which she made a good recovery and was discharged well.

CONCLUSIONS.

A.—Eclampsia is due to a *toxin*, which very probably has its origin in the liver.

B.—Its origin is maternal rather than fetal.

C.—Premonitory symptoms are *always* present.

D.—The most constant and important premonitory symptom is *frontal headache*.

E.—The diagnosis of toxemia of pregnancy should be made early, and if patient is under observation this can generally be done.

F.—Mortality should be kept under 20 per cent.

G.—Treat premonitory symptoms until in spite of the treatment they get worse, then empty the uterus, as in some cases this is the only method of stopping the progress of the disease.

H.—Deliver as quickly as possible, consistent with cleanliness and preservation of soft parts; bleed, removing from 300-700 c. c., as the case may indicate; infuse, giving from 500-1000 c. c. of salt solution, depending upon the amount of blood withdrawn and character of pulse; this may be repeated later; morphia gr. $\frac{1}{4}$, hypodermatically to relax the muscular system; croton oil gtt. 1—gtts. 11 in olive oil 3i 3ii , followed by magnes. sulphate 3ss in saturated solution until effectual as purgative.

I.—Milk and water diet.

J.—Other conditions treated symptomatically.

814 PARK AVE.

THE TREATMENT OF THE OBSTETRIC HEMORRHAGES.*

BY
 GEORGE L. BRODHEAD, M.D.,
 New York.

FOR convenience in discussing the subject under consideration—the obstetric hemorrhages—let us classify all cases of bleeding associated with uterine pregnancy into four classes. In the first class of cases we shall include those in which hemorrhage takes place during the first few months of pregnancy, the so-called abortion cases. In the second class will be included those cases in which hemorrhage occurs from the premature separation of a placenta normally placed—the so-called “accidental hemorrhage” cases. The third class will include placenta previa, and the fourth post-partum hemorrhage.

ABORTION may be threatened, inevitable or incomplete. The treatment of threatened abortion, with slight hemorrhage, is absolute rest in bed, in a room kept as quiet as possible and free from visitors, repeated doses of *viburnum prunifolium* in mild cases, morphine for cases where pain is present; light diet, and the bowels to be emptied by enemata. If hemorrhage is profuse, the vagina should be tightly tamponed with iodoform gauze and treatment administered as above. Inevitable abortion may be treated by the conservative, non-operative method, or by the radical operation of curettage.

There are many advocates of both procedures, and each practitioner must choose for himself which plan he will follow in these cases. By the conservative method the treatment will be largely expectant, the patient being allowed to complete the natural process of emptying the uterus, the medical attendant holding himself in readiness to interfere should the indication arise for so doing. Should the physician be unable to remain with his patient, or should hemorrhage be profuse, a tight vaginal tampon should

*Read before the West End Medical Society, and the New York Post-Graduate Clinical Society.

be applied, for not only will the patient be left in safe condition, but in the case of hemorrhage, dilation will proceed more rapidly. The operative treatment for inevitable abortion is favored by many, for the reason that it is considered to be safer for the patient to have all the products of conception removed at one time, by the finger or curette. By active operative procedure it is claimed that not only is there no danger, but there is better involution, a shorter convalescence, and no danger of sepsis from the retention of secundines. In my opinion, the conservative plan of treatment is safer for general use than curettage. There are thousands of patients treated each year successfully without resort to curettage, and if complications follow, they are explained in many instances by the fact that the patient has been treated carelessly, and the condition made light of. With careful observation, such as all of these cases should receive, I am convinced that complete recovery should follow every case of spontaneous abortion. If subinvolution follows, appropriate treatment should be given for it, and if there are evidences of the retention of secundines, curettage should be performed. While we concede the fact that the operation of curettage is, as a rule, simple, and, when properly done, attended by little danger, we must admit that the operation, in the hands of inexperienced operators, has been proven over and over again to be dangerous, such accidents as rupture of the cervix by instrumental dilation and puncture of the uterus by the curette, being not at all uncommon. In fact, we have the testimony of many of our best men that such accidents happen not infrequently in the hands of careful operators.

Incomplete abortion can be treated properly in only one way, namely, by removal of the retained secundines by means either of the finger or curette.

ACCIDENTAL HEMORRHAGE AND PLACENTA PREVIA.

The differential diagnosis between these conditions is at times exceedingly difficult. Within the past two months I have seen two patients, in one of whom the diagnosis of accidental hemorrhage had been made, because the margin of placenta could not be felt, and also because of the severe pain from which the patient suffered. One month after the examination was made the condition was positively diagnosed as placenta previa, the margin of placenta being felt high up, and when the placenta had been expelled, the small opening in the membranes was found to be located just at

its edge. In the second patient, the diagnosis of placenta previa had been most positively made by several physicians, but the case proved to be one of severe accidental hemorrhage. Diagnosis can be positive only when the edge of the placenta can be felt. It is probable that we have to deal with a lateral placenta previa in many cases of supposed accidental hemorrhage, and vice versa, for the clinical picture may be practically the same in both conditions.

ACCIDENTAL HEMORRHAGE may be of three varieties: (1) external, (2) concealed, and (3) the combined form; and the bleeding in any case may be mild or severe. The treatment of the mild cases, occurring during pregnancy, is practically the same as that already spoken of as appropriate for threatened abortion. If the patient is in labor, and hemorrhage slight, no treatment is necessary; but if in any case bleeding is more profuse, labor should be hastened by the introduction of a modified Champetier de Ribes bag. This will act more surely than rupture of the membranes, and the preservation of the membranes intact is safer for both mother and child. Where hemorrhage is severe, the uterus should be emptied as speedily as possible, consistent with the welfare of the child and the soft parts of the mother. In this condition hemorrhage will continue until the uterus has been emptied; hence the necessity for accurate diagnosis and prompt action. The best method in these cases of severe hemorrhage, external or concealed, is manual dilation of the cervix, or if the cervix be unyielding, the use of incisions, delivery being accomplished by forceps, version or craniotomy, if the child is dead.

On October 30 last I was called to see a patient who gave the following history. The woman was nearly at term in her third pregnancy, the two previous labors having been normal. At ten o'clock on the preceding night she had passed several large blood clots, but had no labor pains. A physician was called and a diagnosis of placenta previa was made. After some difficulty a modified Champetier de Ribes bag was introduced. During the night another physician saw the patient and corroborated the diagnosis of placenta previa. Labor did not begin after the introduction of the bag, and as the patient lost considerable blood during the night, it was my good fortune to see the patient at ten o'clock in the morning. At this time—twelve hours after the initial hemorrhage—the patient was in critical condition, having a pulse of 160, and she seemed to be exsanguinated. The uterus was of about the right size for full term gestation, but the walls were

tense and hard, as if blood had collected in the cavity of the uterus. The patient also complained of pain in the right side of the uterus, and the fetal heart could not be heard, although it had been distinct the night before. The diagnosis was made of partially concealed accidental hemorrhage, and ether was administered preparatory to operation. The cervix was found to be dilated to the size of a half dollar, and what felt at first to be the edge of the placenta proved to be the rim of muscular tissue at the internal os. The bag in this case had slipped up above the head, which presented in L.O.A. position, and was, therefore, perfectly useless. The cervix was then carefully dilated with the hand, and during the dilation a considerable quantity of dark blood escaped from the interior of the uterus, where it had collected during the twelve hours preceding. After dilation the forceps was applied and several tractions made, but it was apparent that delivery by this method would be slow, and in order to make certain of the death of the fetus, the hand was passed up into the uterus and the cord found to be pulseless. Craniotomy was at once decided upon as being the quickest and easiest way in which to effect delivery, and the operation was easily completed and the child extracted in about five minutes. The uterus was filled with sterile gauze, and a laceration of the anterior lip, in which a bleeding artery was seen, was quickly sutured. The placenta was expressed easily by the Credé method, and was found to be normal, except for an area 9x5 c.m. at the periphery of the maternal surface, where there was a distinct depression, partially filled with dark red clots. Just after the birth of the head a number of dark clots, which had evidently filled this depression, escaped from the vulva. The patient, after the operation, was almost pulseless, for she had lost a large amount of blood, but she made an uneventful recovery. In cases similar to this, where the child is dead and there is need of haste, craniotomy is frequently the safest and best operation. Desperate efforts to extract a dead child by forceps or version have resulted in rupture of the uterus and the death of the patient times without number, and I am convinced that many lives could be spared each year if craniotomy were more generally performed.

PLACENTA PREVIA is of three varieties—marginal, lateral and central. Whenever a positive diagnosis of placenta previa is made, the uterus should be emptied as soon as it is possible to do so, the method or procedure depending on the degree of dilation of the cervix, the amount of hemorrhage, etc. If, however, the patient elects to take the risk of further bleeding, and is willing

to place herself in a position of comparative safety in a hospital, where the services of a skilled physician may be obtained at any time, interference with pregnancy may be delayed. Delay under all circumstances is dangerous, but if the patient is so desirous of the life of her child that she is willing to expose herself to what may be great danger, in order that the fetus may round out, so to speak, its full term of intrauterine life, or at least that a period of viability may be reached, under proper medical surroundings, she should be allowed to proceed in her pregnancy. The conditions under which the complication is met with are so varied that no single method of treatment is applicable to all cases. It will be well, I think, to enumerate the different plans of treatment, and then discuss each procedure separately. Tamponade of the cervix and vagina, rupture of the membranes, application of forceps, forcible dilation of the cervix followed by forceps or version, Cæsarian section, use of the modified champetier de Ribes bag, and podalic version by the combined or internal method, are all measures which are valuable in the presence of conditions calling for their use.

TAMPONADE OF THE CERVIX AND VAGINA should be used where the cervix is rigid and but little dilated. Under these circumstances the application of a firm tampon is of the greatest value, not only in checking hemorrhage, but also in softening and dilating the unyielding cervix. The tampon may also be used to advantage in an emergency, when one is unprepared for a more formidable plan of operative procedure, thus allowing time for complete preparation.

RUPTURE OF THE MEMBRANES may be used when hemorrhage is slight and where the cervix is so well dilated it is thought probable that bleeding will cease from the pressure of the presenting part, engaging in the cervix. If, after the membranes have been ruptured, hemorrhage continues, dilation should be completed manually, forceps applied, or version performed.

THE USE OF FORCEPS is of value in those cases in which the vertex presents, and where hemorrhage occurs for the first time, or at least becomes severe, in the latter part of the first, or in the second stage of labor.

FORCIBLE MANUAL DILATION OF THE CERVIX, or accouchement forcé, should, in our opinion, be limited to those cases where combined version has been attempted unsuccessfully, and where it is necessary to dilate the cervix sufficiently to pass the hand into the uterus for the performance of podalic version. In placenta

previa, the lower uterine segment is so vascular, so soft, and so easily torn, that forcible dilation may easily result in serious laceration of the cervix, which, during the subsequent extraction of the child by forceps or version, may extend up into the lower uterine segment, constituting rupture of the uterus, an accident which I have seen occur in two cases of placenta previa.

CESAREAN SECTION has been advocated by Dudley of New York, and there can be no question of the great value of the operation in selected cases. An elderly primipara, for example, is found at the eighth month to have placenta previa. The soft parts, because of rigidity, are not adapted to the necessary dilation, either spontaneous or artificial, the patient is pregnant late in life, and may never conceive again. Under these circumstances, who can doubt that Cesarean section, skilfully performed, would give better results for both mother and child than any other plan of treatment? For many reasons the operation will rarely be done, but with proper conditions, the procedure will be safe and successful in its results.

THE USE OF THE MODIFIED CHAMPETIER DE RIBES BAG has been suggested, both to control the hemorrhage by its pressure, and for cervical dilation as well. Theoretically, at least, the idea is an excellent one, and we have no doubt that, in skilled hands, the use of the bag will be attended by good results. The conical bag is well suited for the purpose of pressure against the lower segment of the uterus, and by traction upon the tube connected with the bag, pressure can be kept up, thus controlling the bleeding. By this method, dilation is slowly and safely accomplished, and when at last the cervix is well dilated, forceps or version can be easily done, the membranes having been kept intact up to the last moment. Careful observation must be made of the amount of bleeding, and also to detect possible leakage from the bag, and one should be prepared to take more active measures should hemorrhage continue, or be at any time profuse. We believe that the method should be given a thorough trial, for it would seem to be an excellent procedure in many cases.

PODALIC VERSION is by far the best known, and, generally speaking, the safest and best plan of treatment of placenta previa. The operation may be performed by the combined, or Braxton Hicks method, or by the more commonly used internal method. The *combined method*, in which two fingers only are passed up to the cervix, is of value in those cases of placenta previa where membranes are still intact, or where there still remains a con-

siderable quantity of amniotic fluid, and the operation can be performed where the cervix is dilated sufficiently to admit two fingers. The history of a recent case will illustrate the value of the procedure. In the latter part of October I was called to see a patient who was bleeding rather freely at about the seventh month. The membranes had ruptured some hours before, but there was still a fair amount of fluid present. While preparations were being made for examination, the woman began to bleed profusely, and as quickly as possible the first two fingers of the right hand were passed up into the cervix, which was found to be dilated to the size of a half dollar, and a lateral placenta previa found. The vertex was quickly pushed to one side, while with the other hand the breech was pressed downward over the pelvic brim. A foot was then seized and drawn through the cervix, out to the vulva orifice, the entire procedure consuming not more than five minutes. Bleeding now ceased entirely, and the patient was allowed to come out of the anesthetic. Labor pains began at once, and within four hours the patient gave birth very easily to a living child weighing about three pounds. There was no bleeding after the foot was brought down, the pressure of the breech against the placenta and lower segment preventing further hemorrhage. The placenta was adherent to the uterine wall, requiring manual extraction, and on account of hemorrhage it was necessary to pack the uterus tightly with sterile gauze. The patient made an uneventful recovery, but the child unfortunately lived but a few days.

Internal Podalic Version is the most frequently used plan of treatment, and is advised under the following conditions: first, where combined version fails; second, in central placenta previa, where it is necessary to pass the hand up through the placental mass in order to seize a foot, and third, in any case of severe bleeding where the cervix is sufficiently dilated to admit the operator's hand. The breech forms, as a rule, a most efficient plug in the lower uterine segment, and bleeding will usually cease after version has been performed. At this point let me utter a few words of warning with reference to rapid extraction following version. I have seen at least two lives sacrificed by rapid extraction in cases of placenta previa, the cause of death in both patients being rupture of the uterus. We have already spoken of the vascularity and soft condition of the lower uterine segment, and we believe, therefore, that the safest plan of treatment after version is to allow the patient to complete the delivery, if possible,

unassisted, interfering only in the presence of a good indication. Rapid extraction in these cases may save the lives of a few children, but it is certain to be attended by a large maternal mortality. In concluding the subject of placenta previa, I would advise forceps or version in those cases where the cervix is well dilated, the choice of operation depending upon the individual skill and personal choice of the operator. Where the cervix is but moderately dilated, the choice will be between the use of the modified Champetier de Ribes bag and combined podalic version, while in the presence of a rigid, poorly dilated cervix, the use of a firm gauze tampon is advised.

POST-PARTUM HEMORRHAGE may occur in the third stage of labor, or after the expulsion of the placenta, and the source of the bleeding may be the uterine sinuses, cervix, vagina, or perineum. It is my opinion that patients frequently lose, unnecessarily, too much blood in the third stage of labor. After the expulsion of the child, the uterus relaxes in some instances sufficiently to allow of free hemorrhage within its cavity, comparatively little blood making its escape externally, and no danger signal in that way given. We have all seen cases where a large amount of blood has collected within the membranes, and again in some instances a considerable amount of blood is expressed before the placenta can be expelled. The fault lies very often in the failure to properly observe the height of the fundus, and the size of the uterus, both immediately after the birth of the child, and during the placental stage, so called. During the third stage the fundus should be kept *at or below* the navel, for should it rise above that point it is probable that blood is accumulating within the uterine cavity. If massage and compression of the uterus fail in controlling bleeding, whether external or internal, the placenta should be removed at once by the Credé method, if possible, or if this method does not succeed, and bleeding continues, the placenta should be extracted manually. After the uterus has been emptied, the source of hemorrhage should be determined. Bleeding from laceration of the vagina and perineum is rarely profuse enough to cause alarm, but the appropriate treatment is the immediate application of sutures through the torn parts. It is very important to differentiate bleeding from the cervix and that from the uterine sinuses, for the treatment of the two conditions is radically different. As a rule, where the cervical artery is torn, the uterus is well contracted, and blood will escape in a small, bright stream. In hemorrhage from the uterine sinuses the

uterus is usually soft and the bleeding is more profuse. In the large majority of cases bleeding from the cervix will cease if no douche is given, a vulva pad applied, and the uterus is allowed to take care of itself, the finger being kept on the fundus simply to note its height and degree of contraction. The limbs of the patient are brought together in extended position, and no massage of the uterus allowed. I have used this method of non-interference, so to speak, in many cases during the past ten years, with excellent results. Within the past few weeks a patient completed the latter part of the first stage very rapidly, a cervical tear resulting, bright blood coming away in front of the advancing head. During the third stage, although the uterus was well contracted, bleeding continued from the cervix, and the placenta was expressed early on that account. After the placenta came away, under the plan of treatment just outlined, hemorrhage entirely ceased. In rare instances it may be necessary to suture the torn cervix, an operation—with good light and competent assistance—not difficult, as a rule, to perform. If unable to suture the cervix, a firm tampon of gauze will usually check the bleeding. For the purpose of controlling hemorrhage from the uterine sinuses I have found the following routine treatment to be efficacious: first, massage of the uterus; second, a vaginal douche of weak lysol, or normal salt solution at a temperature of 116° F. Should hemorrhage continue, a uterine douche of the same solution at the same temperature should be given. While this is being given the nurse prepares a solution of acetic acid, 2 per cent., and if bleeding continues, two to three quarts of this solution are given in a uterine douche. Hot 2 per cent. acetic acid solution, given at a temperature of 116° F., will usually check all bleeding from the uterine sinuses, but if hemorrhage still continues, it is my rule to pack the uterus at once with sterile gauze. I have never seen this plan fail in controlling hemorrhage. Ergot should be given by mouth, or, if bleeding is profuse, by hypodermic, immediately after the removal of the placenta. In an emergency, the plan of treatment would be necessarily different, because of the lack of hot solutions for injections. In cases of this kind the uterus should be vigorously massaged, the placenta removed, the uterus compressed as tightly as possible against the symphysis pubis, and, if necessary, the hand should be carried up into the uterus, with a piece of ice, if possible, and, after removal of all clots, firm bimanual compression should be made. Then, if necessary, strips of bedding or clothing could

be carried up into the uterus and used as a tampon. Pressure on the abdominal aorta may be also used. Hemorrhage in any case having been controlled, the patient should at once be given large quantities of hot saline solution, with stimulants, preferably in most cases by rectum, but, if necessary, intravenous infusion should be resorted to, and, in some instances, hypodermoclysis will prove to be beneficial. The great value of saline enemata, with whisky, or whisky and strychnine, can hardly be overestimated, and whenever the patient loses more than a pint of blood, they may be used to advantage. The application of heat, raising the foot of the bed, bandaging of the extremities, and the routine treatment of acute anemia should, of course, be carried out. Secondary hemorrhage, after a good primary contraction of the uterus, is of comparatively rare occurrence, but should the complication arise, it should be treated on the lines already spoken of in primary hemorrhage. In some cases, at least, the uterus is not made to contract properly immediately after the birth of the placenta, and again it will be found that in some cases hemorrhage is due to the retention of portions of placenta, or blood clots, the treatment of which is, of course, removal of the foreign body.

110 WEST FIFTY-SEVENTH STREET.

PYELITIS COMPLICATING PREGNANCY.¹

BY

ALFRED BAKER SPALDING, M.D.,

Instructor in Obstetrics, University of California; Medical Director, San Francisco Maternity.

ONE of the pathological storms which may arise to disturb the physiological calm of a normal pregnancy is an acute attack of pyelitis. This condition as a complication quite frequent in pregnancy and quite often wrongly diagnosed, was brought prominently before the profession by Reblaud at the Surgical Congress in 1892. Since then a number of observers have reported series of cases which demonstrate that the condition is by no means rare. The latest series comes from Cragin, who reported at the last meeting of the American Gynecological Society ten cases of pyelitis complicating pregnancy, four of which he had met with during the preceding winter.

The pyelitis develops primarily in the right kidney according

¹Read before the San Francisco County Medical Society, September, 1904.

to the cases so far reported, and the preference for the right side is accounted for by the obliquity of the uterus to the right, together with the fact that the presenting part usually engages in the right oblique diameter. The compression of the ureter and the consequent dilatation of the pelvis of the kidney with urine furnishes a soil suitable for the growth and development of germs. Vinay believes that the colon bacillus is responsible for most of these cases of pyelitis and that the colon bacillus can migrate directly through the walls of the intestine and the ureter to reach the pent-up urine. That other germs may and do cause this condition is proven by experiments on dogs and by a few cases where the streptococcus and the gonococcus have been found in the urine.

The symptoms are few and often misleading. Cystitis may precede, but usually follows the attack of pyelitis. Chills are frequent and are followed by an irregular temperature varying from 100° to 105° F., lasting in favorable cases about a week. Sharp pain is complained of which may be referred to the kidney region or may be directly over McBurney's point, as in one of the cases reported by Cragin. At times there is general abdominal pain which causes the patient to draw up the right leg.

So far the diagnosis might point toward one of the fevers such as typhoid or malaria, or toward one of the local inflammations such as appendicitis, salpingitis, cholecystitis or pyelitis. An examination of the blood will usually contract the diagnosis to the surgical diseases mentioned and a vaginal examination will usually exclude the salpingitis. Of the remaining conditions a diagnosis of pyelitis will be made positive or negative by a careful chemical, microscopical and bacteriological examination of the urine. The urine of pyelitis is acid, cloudy, and contains albumin, pus, casts and bacteria. Pus is always present and usually in large quantities. Albumin casts and bacteria vary in quantity and are sometimes not found.

The prognosis is always serious. As the pyelitis depends upon the mechanical obstruction caused by the fetal head, relief by emptying the uterus can always be obtained before the mother's life is sacrificed. But she is liable to an extension of the infection into the kidney substance as long as the pyelitis exists. One case has been reported where the infection extended to the other kidney with a fatal result. The fetus is endangered by the high fever and the occasional necessity of being prematurely delivered.

Treatment consists in applying cold to the region of the diseased kidney, in giving the patient large quantities of water containing urinary antiseptics, and in keeping her in bed upon a milk diet. Occasionally cold baths to reduce the temperature for the relief of the fetus are indicated. Williams advocates the induction of premature labor, but the majority of obstetricians believe that this is rarely necessary. Surgical interference with the kidney is at times necessary.

The following case was referred to me in August, 1903, by Dr. C. A. Clinton:

Primipara, æt. 24. Family history, negative; personal history, scarlet fever when a child, but no trouble with the kidney following it. Shortly after marriage the patient suffered with cystitis, followed by pain in the right lumbar region, and accompanied by chills and fever. A nephrotomy of the right kidney terminated in relief of symptoms. She became pregnant four months later. Her last menstruation began March 25, 1903. Pregnancy was normal until the eighteenth week, when on the day she first felt fetal movements she suffered with pain in right groin, general abdominal pain and a chill. An irregular temperature followed, varying from 100° to 104°, which lasted one week. The urine was acid, cloudy, 1,023, and contained a large quantity of pus and epithelial cells. There were no casts and the filtered urine contained no albumin. The patient was confined to bed, given a milk diet and large quantities of water, together with urotropin. Three weeks after this attack the patient was turned over to me.

She had no pain and considered herself well. The twenty-four hours urine amounted to 2,000 cc. It was alkaline, cloudy, did not contain albumin, sugar or casts, but did contain a considerable amount of pus. The urea output was nine-tenths per cent. Abdominal examination gave evidence that the fetus was presenting by the breech. The fetal heart was to the right of the umbilicus, 160, and strong. The pelvis was contracted, of the simple flat type. The external conjugate measured 18 cm., the internal conjugate 9 cm. The vaginal secretion was normal. She was given urotropin continuously for more than two months, and then, as the urine persisted clear with only a slight amount of pus, medication was stopped. On December 4th, three weeks later, she complained of dizzy spells, but the urine remained clear. On December 12th she had a chill and severe pain in her right side. This was about the thirty-sixth week of her pregnancy.

The urine was acid, 1,020, contained a trace of albumin and a large quantity of pus. An irregular temperature followed the chill, which persisted one week. On December 17th the temperature was 103.4, pulse 104; fetal heart between 180 and 190. A leucocytosis of 10,400 was present. Treatment had been the same as with the previous attack. As the fetus showed such evident signs of distress premature labor was considered, but it was first decided to try the effects of cold baths. Bed baths of cold water and alcohol were given every four hours, with the result that after the third bath the patient's pulse and temperature returned to normal and the fetal heart dropped to 144 and was strong and regular. The urine gradually cleared of pus under a continued treatment with the urinary antiseptics. It was necessary to do a partial internal podalic version four weeks later. There was no fever during the puerperal period. By the eighth day post-partum there was only a very slight amount of pus in the urine. In spite of the fact that the baby's eyes were treated with a 2-per-cent. solution of silver nitrate at birth, on the eighth day a severe conjunctivitis of the right eye developed, which was finally controlled by the usual methods. The patient has had no trouble with her kidney for over a year, but the urine still contains a few pus cells.

751 SUTTER STREET.

A TYPICAL CASE OF TUBERCULAR PERITONITIS.¹

BY

W. P. MANTON, M.D.,
Detroit.

(With three illustrations.)

IN 1862 Spencer Wells stumbled on a discovery of no little importance. In operating for a supposed thin-walled ovarian cyst, he opened up a peritoneum "studded with myriads of tubercles." The patient recovered and twenty years afterwards was in robust health.

In spite of this positive demonstration of the curability of at least one form of peritoneal tuberculosis, made more than forty years ago, surgeons have been slow in appreciating the significance of the fact then made plain, and it has been only within

¹Transactions of the Southern Surgical and Gynecological Association, 1904.

the past few years that the subject has received deserved attention. Even now, out of the mass of literature devoted to the discussion of tuberculosis in general, comparatively few articles have appeared which deal with this particular location of the disorder. This apparent neglect of investigation of the peritoneal manifestations of one of the most serious of the germ diseases, and one which is amenable to surgical treatment as are few other forms, may possibly be explained by the fact that typical examples of tubercular peritonitis are rarely met with.

Borschke, in 226 cases examined at the Pathological Institute in Breslau, found but two instances of the disease which could be considered as of primary origin, while Grawitz, Brunn, as quoted by J. B. Murphy in his excellent monograph on "Tuberculosis of the Female Genitalia and Peritoneum," found only 284 cases of tubercular peritonitis in 13,422 autopsies.

Veit, in his paper before the Fourth International Gynecological Congress in Rome, declares that tubercular peritonitis is always of secondary origin, and collected investigations show that the bacillus tuberculosis probably gains access to the peritoneum in one of four ways: by means of the blood; through the intestines; through the lymph channels; and by extension from the Fallopian tubes. Osler says that in adults the infection passes from the intestines in cases associated with chronic phthisis. Invasion of the peritoneum through the respiratory tract would seem to be most reasonable and possible, and the opinion is held by many observers that almost without exception this is the way by which infection is transmitted. My own investigations, however, fail to corroborate this view in the instance of the insane, among whom pulmonary tuberculosis is of exceeding frequency. In one of the State institutions with which I am connected, search fails to reveal the occurrence of a single case of this disorder.

While the first three sources mentioned must be considered as the occasional route of the infection in women, the last, extension from the Fallopian tubes, is in all probability the most frequent, and one in which early surgical interference gives the greatest promise of curative results. Schramm found in 3,386 necropsies, 34 cases of tubal tuberculosis (1 per cent.), in which number the peritoneum was affected twenty-one times (61 per cent.). It is altogether probable that limited tuberculosis of the pelvic peritoneum is not as uncommon as is generally supposed, its presence being frequently overlooked in the surgical procedure of uterine and appendiceal ablation, and the condition being

"nipped in the bud" by the operation, no further spreading of the disease takes place. Warren states that the commonest seat of limited tuberculosis in the pelvis is in the recto-vaginal or rectovesical fossæ, positions in which few or ill-developed tubercles might easily escape indifferent or careless inspection.

Three forms of tubercular peritonitis are described clinically: a miliary with serous exudate; an adhesive with the formation of adhesions and lumpy tumors on the peritoneum and in the omentum and mesentery; and a purulent ulcerative, in which the intestines and omentum are glued together with encapsulated masses of pus and caseous material between the various coils. Of the three varieties the serous exudative is the most amenable to surgical treatment.

Just why abdominal section exercises a curative effect in these conditions has not yet been satisfactorily determined. That the peritoneum must be well opened from above has been conclusively proved; neither tapping nor vaginal section accomplishes the same results. It is altogether probable that not one but several factors enter into the curative action of the surgical procedure. Theilhaber advances the theory that in certain cases the exudate results from compression of the roots of the portal, mesenteric and other veins by swollen retroperitoneal and mesenteric lymph glands, and that the removal of the fluid by celiotomy gives rise to extensive adhesion formation. In these adhesions new blood vessels are developed and by the establishment of a collateral circulation further ascitic accumulation is prevented. This corresponds to the hypothesis advanced by Thalma in 1898 regarding the origin and effects of treatment of ascites due to cirrhosis of the liver. While possibly explanatory in certain cases of peritoneal tuberculosis, the theory will not apply in every instance, for if removal of the fluid alone is all that is demanded, aspiration or vaginal drainage would prove equally efficient with abdominal section. Moreover, extensive intraperitoneal adhesions do not occur in all cases as the result of operation, and curative action is exerted also in the adhesive and purulent forms of the disease as well as in the sero-exudative form, although to a less degree. Theilhaber further states that celiotomy exerts no direct influence on the tubercles themselves. However this may be, we find that operative intervention gives rise to a marked and rapid diminution in the number of tubercles, and in all probability causes their ultimate complete disappearance. This and other

points to which attention is directed is well illustrated in the following case:

G. H., single, aged 25, entered Harper Hospital January 18, 1902. As far as known the family history is good. Previous health good, although never robust. She began having pain in the right side and back during September of the preceding year. In October she noticed that her clothing was becoming tight and uncomfortable, and discovered a general enlargement of the abdomen. Pain from this enlargement was not conspicuous. At about the same time a troublesome cough developed, there was an afternoon rise of temperature, and she suffered from night sweats. Emaciation was rapid. The bowels were constipated and the



Ovary and tube studded with tubercles.

appetite poor. Menstruation was regular but the amount of flow was diminished. Several physicians were consulted and one of them diagnosed enlargement of the liver and applied fly-blisters, the marks of which are still present.

Status *præsens*. The patient is a brunette of medium height and is considerably emaciated. Heart and lungs normal. Liver very slightly enlarged. Morbidly sensitive, she strongly objects to any but the most superficial examination, so that this is exceedingly unsatisfactory and of little value in determining the nature of the condition present. The abdomen is uniformly distended to about the size of an eight-months' pregnancy, with slight bulging at the sides. Fluctuation is marked over the entire surface. With the patient on the back there is dulness over the entire front of the abdomen, with moderate resonance at the sides.

Change of posture does not modify the percussion sounds. Vaginal examination refused. Per rectum little is revealed; the uterus is anterior and a thickening is noted in the right fornix. The temperature is high ($101^{\circ}/_{10}$), and the pulse rapid (116), but these are thought to be due to the fatigue of the long journey which the patient had just taken. By the next day both pulse and temperature had somewhat subsided.

Operation July 19, 1902. Abdominal walls moderately thick. Median incision three inches long. Peritoneum greatly thickened and of a dull red color. On opening the sac two gallons of a pale yellowish fluid escaped. Inspection showed the appendages, the



Ovary and tube studded with tubercles.

posterior wall of the uterus, the appendix and intestines, and the pelvic and abdominal peritoneum, as far as the eye could see and the fingers touch, to be thickly covered by miliary tubercles of a reddish-gray color. So closely set, in most places, were these growths that the finger-tip could hardly touch the peritoneum without coming in contact with them. No enlarged lymphatic glands were found. The Fallopian tubes were considerably enlarged and slightly adherent. The uterus was small and apparently healthy. The intestines were matted together and lay high up against the vertebral column. The appendages and appendix were removed, the abdomen flushed out with two gallons of warm saline solution, a glass drainage tube placed, and the abdominal wound closed. The patient made a good but somewhat protracted recovery and left the hospital in excellent condition during the fifth week following operation. Examination of the fluid withdrawn from the abdomen by the Detroit Clinical Laboratory

showed it to be albuminous in character, with a specific gravity of 1.025. No tubercle bacilli or other bacteria were present. The ovaries, tubes and appendix removed were submitted to Dr. Heneage Gibbes, who reported as follows:

Ovaries.—On the surface of the ovaries are numbers of miliary tubercles, and where the section has been made through one or more of these it is seen that they are clearly superficial and do not penetrate into the substance of the ovary. For the most part, they are not even closely attached to the organ, but only at one or two points can direct attachment be made out. In some parts these tubercles are in a single layer only, but in others there are three or four in the width of the mass. Each tubercle is composed of the typical structures, one or more giant cells and a reticular tissue. Between the individual tubercles where they are in more than one layer there is a fibrous tissue arrangement around each tubercle. This is rather unusual. At the point of contact of the tubercles with the ovary the germinal epithelium is absent, but the stroma of the ovary and the small Graafian follicles are unaltered.

The ovary itself is the subject of degeneration to some extent. There are masses of hyaline material and tortuous bands of the same in the matrix.

Fallopian Tubes.—The arrangement of the tubercular growth differs entirely in the Fallopian tube. Here it occurs in two positions, in the lumen of the tube and on the surface of the broad ligament. The lumen of the tube is almost occluded by a tubercular growth consisting of small tubercles which have almost entirely displaced the normal folds; small portions of these can be seen in the tubercular mass covered with columnar epithelium.

The tubercles themselves differ also from those on the surface of the appendix and ovary. They contain one or more giant cells like the others, but the groundwork differs, being in the tube composed of large cells which stain faintly, they seem to be undergoing some degenerative process. On the surface of the broad ligament the miliary tubercles occur, for the most part, singly, and resemble those on the ovary and appendix. *The tubal growth gives the impression of being older and having passed its prime.*

A number of sections from these organs were submitted to different staining methods for a considerable time, and were then examined most carefully for tubercle bacilli, but not a single one could be found in either of them.

Appendix Vermiformis.—Miliary tubercles are found all over the surface of this organ. They are about the same size as those on the ovary and each one contains a relatively large giant cell in the center. They are more solitary than on the ovary, but are situated with the same relations. As far as can be made out, they are not in the structure of the organ, but on the outside of it, and further than this, they are on the outside of the peritoneum looking from the appendix, but of course within the peritoneal cavity.

At the hiatus in the muscle coat where the meso-appendix is attached these tubercles occur on either side of this fold and are



Appendix from case with tubercular peritonitis.

here considerably further from the appendix than in other parts of its periphery.

Nota bene.—This hiatus is not constant throughout the length of the appendix, in many places there is a perfect circular and longitudinal muscular coat.

On July 16th the patient returned with the following history: Soon after leaving the city the wound had opened slightly at its upper angle and discharged a small quantity of serous fluid. Later the discharge became dark brown in color and had a distinctly fecal odor. Two weeks before the seeds of berries which she had eaten were said to have passed through the opening in the scar.

Operation July 20th. On opening the abdomen for the second time marked changes were found to have taken place within the serous sac. The peritoneum was still somewhat thickened but much less so than at the operation six months before; its color was approximately normal. The intestines now occupied their normal position and were slightly attached to the region of the former scar. Fine cob-web adhesions extended from coil to coil, but no firm bands were present. The omentum contained no nodular growths. There was no free fluid in the abdominal cavity. Most strikingly noticeable was the change in the number and appearance of the tubercles. Some of these were still seen and felt irregularly scattered over the abdominal and intestinal peritoneum, but where thousands had existed before, only a few

separated growths were now left to mark the site of their former abundance. The tubercles were inconspicuous and of a grayish color. Unfortunately a specimen for histological examination was not removed. The fecal fistulous tract was dissected out and its lower end closed by sewing over with eye silk. This point was covered with a square of Cargile membrane, and a strip of the same material was placed under the abdominal wound before closing. The patient was slow in recovering and, the skin edges of the abdominal wound suppurating, they were again refreshed and brought together by sutures on August 10th. The patient was finally discharged in good condition September 7, 1902.

April 18, 1904, patient again seen. She is in excellent health, has good color and rosy cheeks, and has put on flesh. The cough has about disappeared. The abdomen is flat and there is only slight sensitiveness to pressure over the left iliac region. At the middle of the puckered abdominal scar is a pin-hole opening, now capped over, which she says at times discharges a few drops of serum.

December 6th, the patient writes that she is in very good health and getting better all the time. She has put on about fifteen pounds of flesh. The cough has entirely ceased.

32 ADAMS AVE., W.

THREE SPECIMENS OF EXENCEPHALIA.¹

BY

HENRY F. LEWIS, M. D.

Instructor in Obstetrics and Gynecology in Rush Medical College, Chicago.

(With five illustrations.)

THE class exencephalia embraces the results of craniorrhachischisis where the defect in the posterior commissure of the body includes the cranial vault, but where considerable brain tissue remains. There are two general etiological factors which obtain in these cases. Adhesions of the cephalic hood of the amnion at an early embryonic period to the underlying tissues of the cephalic end of the embryo or pressure of a contracted amnion upon that region represents one of the factors. The circulatory dis-

¹Presented to the Chicago Gynecological Society, Nov. 18, 1904.

turbances which result in fetal hydrocephalus represent the other factor. These last act by the pressure from within the skull, which prevents the closure of the vault of the cranium in different places or in all parts. The result is a defect in the bony covering of the brain, more or less complete, which permits the escape of part or all of the brain with or without more or less of a meningeal cystocele. The time of the action of the disturbing force is chiefly responsible for the particular variety of monstrosity which finally ensues.

The class exencephalia is divided into the following genera, named on account of the place of the bony defect or of the encephalic tumor. Beginning at the extreme front we encounter the proencephalus, in which the defect is in the frontal bones



Fig. 1. Case I.—Proencephalus.

mainly and in which the encephalocele above the nose often hangs down in front of the face. In these cases the tumor is almost always covered with all the cranial membranes and the external skin. The variety is rare. Next comes the hyperencephalus, where the defect is mainly in the posterior part of the frontals and in the parietals. Here the brain or the meningo-encephalocele escapes through the vertex and appears as a tumor at the very top of the head. If the bony defect is extensive the brain is likely to be exposed upon the base of the skull uncovered by integument. The variety is not common.

The cranial defect is most often in the occiput. There is usually also spina bifida to a greater or less extent. When the defect is

considerable and most of the brain lies outside of the cranial cavity upon the cervical vertebræ the monstrosity is called *exencephalus proprius*. The other bones of the cranial vault besides the occiput are present, but are of small size, and lie close to the base of the skull, because the brain is not contained within their circumference. If the early destruction of embryonal cells has gone a little farther or has begun a little earlier, even the traces of brain are destroyed and we have the complete types of the next variety, namely, *anencephalus*. This is the most numerous class of all monsters. There is always, in *anencephali*, *spina bifida* involving at least two or three of the cervical vertebræ, and often most or all of the spinal column. Frequently the fetal body



Fig. 1. Case I.—Proencephalus. The scalp has been dissected away from the skull, showing the concavity of the parietals and occiput, the defect in the frontals and the collapsed encephalocele above the last.

is retroverted or retroflexed, sometimes to an extreme degree. When the fetal body is retroflexed, especially at the cervical region, it sometimes happens that the defect in the occiput overlies the defects in the laminæ of the cervical vertebræ, so that the parietals act as laminæ and cover the brain, which lies nevertheless partly upon the cervical and sometimes the upper dorsal vertebræ. This makes the variety known as *iniencephalus*. When the defect in the occipital bones is small and the integument is not destroyed over it, the meningo-encephalocele may escape and hang in a sacculated tumor over the dorsum of the fetus like a waterfall. This kind of monster is called *noten-cephalus*.

I present to the society three examples of exencephalia which have lately been acquired by the Gynecological Laboratory of Rush Medical College. The first is a proencephalus and the other two exencephalus proper.

CASE I.—The first specimen is probably the most interesting, as it is very rare. This is the head of a full-term male child, born alive, which lived several minutes, breathing normally for that length of time. The first picture will show the general form better than this dissected specimen which I have not yet stuffed up again into presentable shape. This large sacculated tumor lies in front of the forehead, and, as you see, begins directly above the root



Fig. 3. Case II.—Exencephalus.

of the nose just above the eyebrows. There is a ridge of bone above the eyebrows extending around to the temples on either side and a ridge of bone extending forwards at this point (indicating). In the middle there is another ridge of bone extending upward, across, and running down into the falciform portion of the dura in which there is also bone irregularly placed. Far back here, yet connected with the calvarium, but not with the base of the skull at all, there is a large mass containing considerable cartilage. There are three separate tumors, the large ones in front, one on each side representing the hemispheres, and one in the middle that contains simply water. This is connected posteriorly with

the brain just behind the remains of the frontal bone. You can see the remains of the two parts of the frontal bone. Here is the parietal (indicating), and here the occipital, which appear all right except that they are smaller than normal and are partly concave externally. There is a concavity of the temporals, too. There is a large part of the brain and a great deal of water in these two sacs in front. Below and posteriorly we have the normal region of the cerebellum and the medulla. The child exhibited no other anomalies whatever. The case is one of proencephalus.



Fig. 4. Case III.—Exencephalus with Spina Bifida

The defect is in the frontal bone. The face bones are flattened out a little and turned forward.

CASE II.—You see behind the rudimentary skull the brain; the two hemispheres and, below, the cerebellum. These skulls contain within them no brain whatever. It is a male and belongs to the class of exencephali proper. It was about eight and one-half months' gestation. I show you a side view of it. The history of the case was sent to the Rush Medical College by Dr. John A. Anderson of South Chicago, who delivered it a few months ago. It was the product of the seventh pregnancy of a woman who had borne five children normally, and the last one

was a three months' miscarriage, following which she had a great deal of hemorrhage, had to be curetted, and the uterus was packed several times, and two or three months after that miscarriage, and just a little while before conception with the present fetus, she was still suffering from anemia. There is spina bifida of the first three cervical vertebræ, but no retroflexion of the spine or skull.



Fig. 5.—Notencephalus.

CASE III.—Here is another specimen of about six and a half months. Of course, this child's head looks smaller than it really is, because there is no calvarium. The head is extremely retroverted upon the retroverted spine. In this case there is a marked retroflexion of the whole fetus. Here is the tip of the coccyx where my finger is, and here (indicating) we have the anterior portion of the skull, so that you see there is considerable retro-

flexion, which is more marked in the region of the base of the skull and in the region of the cervical spinal cord. Here is an open spina bifida down as far as the lumbar region, and underneath the skin one can feel there is a complete spina bifida to the tip of the coccyx. This exhibits the open type as distinguished from the closed type, exemplified in the first specimen I passed around. I do not know anything about the history of this case. One other picture which I pass around shows an ordinary exencephalus, another a common anencephalus. In the case of the anencephalus there is only a slight spina bifida, the latter occupying only the upper cervical vertebra, while the exencephalus has a spina bifida which runs down to the tip of the coccyx.

SOME CONCLUSIONS AFTER OPERATING FOR TWO
YEARS ON THE PELVIC DISEASES
OF INSANE WOMEN.

BY
LE ROY BROUN, M.D.,
New York.

ROBERT BARNES, in discussing before the British Gynecological Society the condition of a patient, once said: "There is no reason why a woman in an asylum who is suffering from a uterine complaint should not be attended to, whether or not it makes any difference in her mental state."

More Maddin gives it as his opinion that many women suffering from reflex-cerebro nervous disturbances consequent upon pelvi-uterine irritation or disease are confined in asylums. While More Maddin undoubtedly had some reason for expressing such an opinion at the time in which he spoke, I, however, have my doubts that such a condition could exist at present.

Robert Jones, of the London County Hospital, England, quotes Gooch as stating that no medicinal agents can relieve a disordered mind except indirectly through the disorder of the body with which it is connected, and this disorder of the body must therefore be ascertained and discriminated whenever possible.

All alienists recognize that the restoration of a mentally disturbed patient to full physical health goes far towards lifting

the unfortunate one out of her disturbed mental state; and that the earlier the bodily functions are brought to a full, active normal condition after the first evidence of mental disturbance the brighter is the outlook that the patient may regain a mental equilibrium.

With wise forethought Doctor Peterson, the late president of the Board of Commissioners of Lunacy, requested of the heads of the various insane hospitals of the State that a systematic surgical relief be given in conditions needing such in patients under their care. Through the hearty co-operation and unremitting attention of Doctor Dent, Superintendent of Manhattan State Hospital, this has been thoroughly carried out in the hospital under his charge. There is attached to each State institution a woman physician. Her especial duty is to make a pelvic examination of each patient within a few days after entering the institution. At the same time as complete a gynecological history is obtained from the patient herself as is possible. This history is further amplified by information obtained from the relatives. Wherever the pathological condition in the pelvis is of such a nature as to give decided symptoms, the patient is referred to me for examination during one of my regular visits to the hospital. It is upon these patients that operations are done.

Careful histories have been kept of the rate of mental improvement before and after the operation to determine if possible how far the remedying of existing pelvic lesions or the removal of pathological tumors influence the mental recovery of patients. The recovery of mentally disturbed patients following operations is surprisingly smooth. When first undertaking the work in this institution, I anticipated much trouble from increased excitability immediately following the operation, and provided for such a possibility in closing the abdominal wounds and placing the dressings. I have, however, found that these patients are remarkably free from the nervous excitement anticipated. They are amenable to advice and are anxious to do as we wish. In a few instances when the patients were previously excitable the presence of a nurse by her bedside has been sufficient to exercise a calming influence.

The question has been frequently asked me whether a surgical operation on an insane patient would not be a factor in causing the mental disturbance to be more pronounced. This preconceived idea appears to be very common among physicians. I can emphatically say this is not true. Not one of the 248 patients operated on has been made more excitable as the result of the

operation. Their delusions are not accentuated, nor do those previously depressed become more so.

If no improvement in their mental state can be attributed to the benefit accruing from the operation, it is certain that in no instance has their psychical disturbance been accentuated. At times the mental improvement is strikingly noticeable, especially so in cases of septic psychosis. As examples of this I cite two of the following cases :

C. S., age 21, single, entered the hospital December, 1902, with a history of one month's mental disturbance. At the time of admission the patient was emaciated and refused to take food. The mental depression was deep, the patient not answering when spoken to, or taking any notice of her surroundings. It was necessary to feed her for some months by means of a tube. The pelvis was filled with an exudative mass, and escaping from the uterus was a foul-smelling, purulent discharge. An operation at this time could not be considered on account of the wasted physical state of the patient. A year later the physical improvement was such as to justify operative measures. During this year of building up, the patient's depressed mental state had not improved. A complete hysterectomy was done January 28th, 1904, including removal of the adnexa. The condition was one of old pelvic cellulitis in which purulent sinuses ramified in the broad ligament and between the uterus and the bladder. Within a week after the operation the patient began to speak to the doctors and nurses—calling them by name, and greeting them with a smile. This improvement continued to be rapid. At the present time she is interested in her surroundings; is of a happy, sunny disposition, and never loses an opportunity to speak to those she knows, and carries on a conversation with apparent intelligence.

B. L., single, 34, entered the hospital May, 1903, giving a history of three years' previous mental disturbance. At the time of entrance the patient was violent and at times spoke of evil spirits and devils in her abdomen. Physical examination showed the intestines much distended with gas and over the right side there were marks of blisters where she had attempted to remove the supposed evil spirit. The temperature was 101.5°.

After the intestines had been relieved of some of the gas, a mass was made out over the region of the appendix. At the same time the leukocytosis was found to be 23,000. An operation was done at once, an appendicular abscess was evacuated, and at the same time the appendix presenting itself was removed. The

recovery was uninterrupted, excepting the occurrence of an intestinal fistula which healed in due time. While in the process of recovering from the operation her visceral delusions disappeared, and her mental balance was restored in almost every particular. She was subsequently discharged, apparently cured.

These two cases are unquestionably a septic psychosis in which the relief of the sepsis improved the mental condition. The improvements are not confined, however, to such conditions; for example, I cite the following two cases:

Mrs. T. M., widow, 30 years old, was admitted to the hospital November, 1902, with a history of having been insane six weeks prior to admission. The diagnosis of acute delirious melancholia was made by the admitting physician. The pelvic condition was one of a bad laceration of the cervix and perineum. For the four months she remained in the hospital prior to the operation the usual line of treatment was carried out; and no improvement was noted in her mental condition. Two months following the operation of excising the disordered portion of the cervix and repairing the perineum, her mental condition became much improved, and continued to improve up to the time of her discharge. This mental improvement was coincident with the physical improvement as a result of the operation.

To cite another case of the same character:

Miss M. D., single, age 23, was admitted to the hospital June, 1902, with a diagnosis of acute melancholia, and giving a history of having had three previous attacks. The pelvic condition was one of endometritis with stenosis of the internal os. Divulsion, and curettage was done a month after admission. The physical improvement was marked, and with it the mental improvement. The patient was discharged a year later, improved.

The modern treatment of insanity resolves itself into improving by every method known the general health and mental happiness of the patient. They are given occupation and systematic physical exercise. Their digestion is closely looked after. A well-equipped, modern hydrotherapeutic plant is brought into frequent use. Electricity is used when indicated. In fact, every modern appliance is utilized for raising to the full quota the patient's general health. In addition to the therapeutic and hygienic measures, the patient is surrounded by cheery comfort. The wards are bright, cheerful and airy. There is hung upon the walls an abundance of good pictures. Flowers and growing plants are in abundance. The beds are excellent, each being supplied with

good springs and hair mattress. The linen is clean. The dining rooms are furnished with small tables seating only a few at each. The table linen is fresh and clean; each patient is given a knife and fork. The whole has the appearance of the dining-room of a hotel rather than that we are accustomed to believe exists in a public state insane asylum. Physical restraint is not countenanced.

With so much prominence given to this hygienic and suggestive treatment of insanity, it is but reasonable to expect that when pathological conditions exist in the pelvis and are of such a nature as to give rise to a well recognized train of nervous symptoms, such conditions should be remedied. Many pelvic lesions and diseases undermine a woman's general and nervous health.

The restoration of the patient's health through correcting such conditions must therefore be one factor of many brought to bear in improving her mental condition. In order that this physical improvement spoken of shall exercise a beneficial influence upon the patient's mental condition, it must be brought about, as with all other treatments, at as early a time as possible after the recognition of the mental disturbance, otherwise the disturbed state becomes more of a fixed habit and is the more difficult to influence.

Dr. Manton, of Detroit, who has operated largely on insane women, speaks of the necessity of operative measures when needed, being done early. My own experience accords fully with that of Dr. Manton and alienists in general.

In reviewing the histories of the entire number of patients operated on within the last two years, I find that among those in whom pathological pelvic conditions existed which were remedied within six months after the commencement of their mental disturbance, improvement has been noted in the mental condition in 65 per cent. Under the same circumstances, but when the operations have been done after one year of mental disturbance, there has been an improvement in only 27 per cent. of the patients.

I wish it understood that these percentages are only relative, and do not represent an actual improvement in insanity as due entirely to surgical operations. They show, however, that a relief from bodily suffering and from the nervous symptoms resulting therefrom is a strong factor in helping the patient to get better, and when this relief is given early, its value as one of the important measures in the treatment of the patient is greater than when used at a later time. Viewing such operations from the stand-

point of the physician, whose mission is to relieve and to lighten as much as is in his power the physical distress of those suffering, it is our duty to render every assistance possible, surgical and otherwise, to these unfortunates. In many instances their faculties are so blunted as not to be able to locate the seat of their discomfort, even under close questioning. In others, the weakened mind does not differentiate or localize the especial character of pain. It is our duty to make a thorough physical examination of each patient, and wherever pelvic or other lesions exist that we know must give rise to certain symptoms detracting from the general health of the patient, such lesions should be rectified, whether there is any likelihood of the patient's mental condition being benefitted thereby or not.

The surgical results in operations upon this class of patients are in no way inferior to those obtained in the best surgical hospitals. Two hundred and forty-eight patients have been operated upon in the division under my charge during the last two years. During this time three patients have died after operations, one from shock following Halstead's operation for removal of a carcinomatous breast. This patient had an aortic disease which was not known before operation. Another died from a continuation of a general sepsis resulting from puerperal septicemia. The removal of the septic uterus failed to render the service I had hoped for.

The third death followed an extensive resection of the small intestine for obstruction, the result of dense intestinal adhesions.

Primary union is almost universal, and it is extremely rare that contamination of the wound occurs from the patient's inquisitiveness.

For the excellent aseptic operating technique in vogue at the hospital I feel indebted for the willing co-operation of those concerned in the operations, and would feel remiss if, in closing, I did not express my appreciation of the valuable assistance rendered by Dr. R. M. Rawls, who has been associated with me during my connection with this institution.

I wish also to express my appreciation of the efforts of my operating nurse, and the unswerving, conscientious performance of her work. It is through her willingness to do as told and her ever watchful care that our asepsis has approached a degree of thoroughness of which we are justly proud.

PELVIC INFLAMMATION. A DISCUSSION OF ONE OF THE MOOT QUESTIONS RELATING THERETO.¹

BY

L. H. DUNNING, M.D.,

Professor of Diseases of Women, The Medical College of Indiana,
Indianapolis.

THE purpose of this brief paper shall be to endeavor to show what I believe to be an error on the part of the authors of a considerable number of recent American text-books upon diseases of women in not presenting a systemic description of pelvic inflammation.

Of such books published during the last few years, but few of them recognize or describe pelvic inflammation as a distinct disease presenting a clear and well defined clinical picture, running a more or less uniform course, presenting distinctive physical signs and terminating in various ways, but in each case having a termination that may be predicted with considerable accuracy by one watching its progress from day to day. Probably the nomenclature of the disease is faulty, and its varied terminations have been important factors in its elimination from text-book treatment; but it is more probable that the lack of a clear and comprehensive definition of the disease has been the most potent factor in its disappearance from recognition. The writer is aware that there are those whose statements we deem authoritative who deny the very existence of such a disease, and who state that the employment of the term pelvic inflammation leads to confusion and error. To them it seems to appear more rational to break up the complex disease into its component parts and describe each separately, as salpingitis, ovaritis, pelvic peritonitis and pelvic cellulitis. Such authors refer incidentally only, if at all, to the fact that these lesions as a rule in the acute stage are so universally and closely associated that during the first few days of their progress it is impossible for the most skilled diagnostician to determine which structure shall in the end show the dominant lesion. Here is where I think the error lies, for, as a clinical teacher, I have for many years searched for the purpose of demonstration, for a case of acute infective salpingitis existing

¹Read by title at the meeting of the Southern Surgical and Gynecological Society, November 15, 1904.

as a separate and distinct disease without the presence of ovaritis or pelvic peritonitis. My search has not been fruitful, for while I have found many hundred cases of acute inflammation of the pelvic tissues in which the endometrium, the Fallopian tubes, the ovaries and the pelvic peritoneum and not infrequently the pelvic cellular tissue also have been simultaneously involved in the inflammatory process, I have seldom, if ever, found an example of an acute infective salpingitis alone. The same is true though not to so marked an extent in reference to acute septic ovaritis and pelvic peritonitis. I have observed quite a few cases of pelvic cellulitis and cellular abscess following abortions and labor without the presence of salpingitis, etc., a few cases of acute pelvic peritonitis without salpingitis and ovaritis. In the light of these findings what must I conclude? That in pelvic infections we find as a resultant a complex lesion involving simultaneously the endometrium, Fallopian tube, ovary and pelvic peritoneum and frequently, too, the pelvic cellular tissue, and in exceptional cases the bladder, rectum, a part of the omentum and small intestines also. I shall say then that pelvic inflammation is a complex lesion involving in an acute inflammatory process, tissues of a widely different histological structure, viz.: the endometrium, the Fallopian tubes, the ovaries, the pelvic peritoneum, frequently the pelvic cellular tissue, and occasionally the rectum, bladder, portions of the omentum and coils of small intestines also.

The usual starting place of this inflammation is in the endometrium. From thence it spreads by continuity and contiguity, by contiguity alone, or by the way of the lymphatic or vascular system to the structure beyond, already mentioned. That the disease may occasionally result from a spread of an infective inflammation from the peritoneal cavity as in suppurative appendicitis there can be no doubt. In such a case the area of inflamed tissues may be more localized and the pelvic cellular tissue seldom involved and more seldom the endometrium is involved. In a small percentage of cases the Fallopian tube may be the seat of the primary lesion. Here again the pelvic cellular tissue and the endometrium are not very prone to become involved in the inflammation.

In all these instances, from whatever tissue the lesion may spring when well under way, the disease will present a more or less uniform clinical picture. All gynecologists have seen it almost numberless times. In a brief outline I may say that as a rule pelvic inflammation is ushered in by a chill followed by fever,

pelvic pain, backache, vesical and rectal tenesmus and general malaise. There is extreme nervousness, frequently nausea and vomiting, and frequently, too, distressing headache.

The physical signs are distinctive. They are: rigidity of the abdominal muscles in the hypogastric and inguinal regions and marked sensitiveness to pressure in the same regions.

The vaginal touch reveals after the first two or three days, and for from ten days to two weeks in favorable cases, a fixed uterus, induration of the tissues in the vault of the vagina and exquisite tenderness on pressure.

In the non-suppurative variety of the disease at the end of ten days or two weeks resolution is well under way, and the induration begins to disappear or become localized. Heretofore no reasonable palpation could locate the tubes and ovaries. Now they are found as tender swollen and agglutinated masses upon either side of the uterus or in the cul-de-sac. A little later, if resolution progresses, the uterus has become movable, the appendages less swollen and the tenderness has nearly or entirely disappeared. Possibly adhesions have formed binding the uterus in an abnormal position and fixing the appendages in the cul-de-sac.

If the case be a suppurative one, the Fallopian tubes are, in the end, the most persistently involved. The case is in every way more grave, yet the most acute diagnostician could not at the outset determine that the lesion would be accentuated in the Fallopian tubes, and that they would finally be distended by pus. Just at this point I have several hundred times instituted surgical intervention, finding one or two pus tubes, a thickened inelastic pelvic peritoneum and a swollen edematous or suppurating ovary. Now if in this brief and very incomplete description of the course symptoms and physical signs, of pelvic inflammation, I have been true and accurate, I have presented a picture that you have often looked upon. What shall we name the lesion? Certainly not salpingitis nor ovaritis nor pelvic peritonitis.

Many of the authors of fifteen or twenty years ago called it pelvic inflammation. The name has gone around the world and become a part of our medical nomenclature. The writer is satisfied with it, if it can be understood to mean the definite lesion he has endeavored to describe. Sometimes we see the pelvic peritonitis and cellulitis so extensive and other organs and tissues such as the bladder and rectum, portions of small intestines that have become adherent to structures within the pelvis and portions

of the omentum so involved that the writer thinks the word "diffuse" has been properly added in such cases, and the name of this complex lesion has been denominated diffuse pelvic inflammation. Again, in some of the milder cases it is recurrent in type, so that it seems to the writer that it is appropriate to call the lesion recurrent pelvic inflammation. Ordinarily the name matters little, but the truth is all important.

If we would understand the inflammatory lesions of the pelvic reproductive organs we must first study them in their associated relations and finally the inflammatory lesions of the component parts.

FIBROID TUMORS AND PREGNANCY.¹

BY
S. MARX, M.D.

WITH few exceptions fibroid tumors of the uterus should at all times if possible be treated, or such treatment instituted, before the advent of pregnancy. Their association with pregnancy forms a complication which must in many patients be looked upon not as a benign but as a malignant state. Their tendency to rapid growth, their likelihood to undergo sloughing and degeneration and the great probability of such growths, when situated below the intermediary zone of the uterus, to make an otherwise normal labor one of utter impossibility or fraught with the greatest danger, is but what we may have to expect in dealing with fibroids and pregnancy associated in one uterus. With hardly another complication in the entire domain of obstetrics are we surrounded with such a mist of doubt as with this one, nor can we ever certify before what we may not run up against, immediate or remote. No matter how small or insignificant the tumor may be in the non-pregnant state, no living being can tell, no matter what the location of the tumor, what we may expect during labor; again, that we may not be confronted with an impossible labor, a furious if not lethal hemorrhage; or overcoming these horrors that we may not lose our patient from sepsis, due to a sloughing of the tumor; or if, then, it may not end, with what the pregnancy should have been anticipated by: a hysterectomy.

¹Presented in a Symposium on Uterine Fibroids before the County Society of New York, Nov. 28, 1904.

But Nature is kind to the poor women with fibroid uteri, for many of them are incapable of conception. I am not pessimistic in my remarks, for we must remember we are always dealing with an unknown and uncertain complication, the end results of which in many cases defy our most sincere endeavors as to prognosis and line of treatment. We know, in a measure, how to be on our guard in a pelvis more or less contracted. We can anticipate danger in cases of placenta previa or in the toxemia of pregnancy. But in fibroids, I can do no better than contrast the following two cases, compare one with the other (one of fibroid in a pregnant uterus, the other a case of kyphotic pelvis), and our positions become intangible.

CASE I.—A badly deformed primipara, suffering from a kyphotic spine, badly nourished, height about 4 feet. A careful pelvic examination shows a material narrowing in all the diameters of the pelvis, with an estimated true conjugate of 3 inches. Came under observation when seven months pregnant. The suggestion to induce labor at this time was refused, and its alternate, a deliberate Cesarean section at term, advised and accepted. The patient came again under observation at term and in labor. Head well engaged. The labor might have terminated normally, but because of the condition of the patient, who was physically weak and in a miserably nourished condition, a simple forceps operation delivered her of a seven-pound baby.

In commenting upon this case we can only state, by all the fixed and written rules of midwifery, she ought to have been subjected to an abdominal section in order to deliver her; and yet, in spite of our laws of mensuration and supposed knowledge of contracted pelvis, she delivered herself practically after a normal fashion.

CASE II.—A healthy, vigorous Italian woman whose previous labors (I believe eight in number) had been supervised by a midwife; consequently we must suppose they were normal. In her present pregnancy, her position as to her financial standing having improved, she sought the advice of an able physician to attend her in labor. Examination one month before labor showed normal conditions as certified to, to me by her medical attendant. At the end of a normal utero-gestation she went into labor and her physician upon examining her found that instead of a fetal part presenting, the entire pelvic brim was blocked by a hard tumor. Upon seeing the case the os was found, pushed high to the left: the presenting part could not be felt. A Cesarean section was

advised and accepted at once, the patient exacting a promise that the uterus be not removed. The operation was performed and a living child delivered. The convalescence was normal. Examination of the tumor and its relation to the pelvis was made at the time of the operation, and it was clearly shown that we were dealing with an intro-ligamentous fibroma blocking practically the entire pelvic inlet. Two months after the section the examination showed the remnant of the tumor to be situated in the right broad ligament and, as a result of a complete and rapid involution, it could just be made out, about the size of an ordinary bean. The advice to remove this nodule to prevent a recurrence, was absolutely refused.

This case requires no comment, but proves that even the smallest fibroid, no matter how insignificant, may present a barrier which may be almost unsurmountable.

To grasp properly the subject before us, we must realize that the most important problem is the treatment of this condition, both from a prophylactic and curative standpoint. To anticipate my remarks as an obstetrician, I should like to place myself upon record as to my belief as to the treatment of fibroids in general as a gynecologist. This I can do in a very few words. Should there be found a "Fibroid Uterus" in any woman who presents herself for such symptoms as would warrant a pelvic examination, I would unhesitatingly advise a hysterectomy, except in those few cases where a simple myomectomy could be done, or where there is a vital indication against such a radical measure. To go a step further, possibly beyond the scope of this paper, my position in reference to fibroids at or after the menopause, is again one of absolute radicalism.

Should, nevertheless, a patient with a uterine fibroid become pregnant, what would be the best line of treatment to be instituted? First, a diagnosis of pregnancy must be certain, for many grave errors have been committed in extirpating tumors for the time being, otherwise harmless, the rapid growth of which was wrongly diagnosed as due to rapid changes in the tumor, the pregnancy not being suspected. A diagnosis of pregnancy with a safe fibroid tumor as a complication, i.e., one situated at the fundus, is often exceedingly difficult. The local findings as to uterine globulation and symmetric growth, as well as softening of the lower zone, are often absent. A rapidly-growing fibroid in a woman capable of impregnation should be looked upon as suspicious of pregnancy, especially in the presence

of general symptoms indicative of pregnancy, ignoring local signs which, under normal conditions, are pathognomonic of pregnancy. In fibroids at the fundus we watch the cases with armed expectancy and, since they are usually non-provocative of mischief during labor, interference is seldom called for. Where they do give rise to trouble there is hemorrhage, persistent and continuous, during pregnancy. Here the indication is vital, and when imperative the uterus should be emptied, or, better, removed.

Fibroids involving the dilated zone of the uterus are of the utmost interest to us as accoucheurs, and must demand instant interference where their position is so low as to either obstruct the labor entirely or prevent the dilatation of the parturient os. Our first means should be the attempt to displace these tumors by pushing them up above the presenting part. This must not be persisted in too energetically for the reason that too great persistence in our efforts will provoke traumatism and possibly necrosis of the tumor. This especially holds good in intra-ligamentous tumors and in those that may become fixed in the pelvis by adhesions. Should this complication occur early in pregnancy, the woman must be aborted, followed or not by a hysterectomy as the operator decides. When we first meet these cases at term it may be possible to extirpate these tumors by vaginal section; but this is seldom advisable or feasible. Our results would be better guaranteed by a deliberate Cesarean section terminated by a hysterectomy.

The treatment of this complication during the process of actual labor becomes one of the utmost importance. The complications that may arise are manifold; some may be overcome by simpler means, others of a major type compel us occasionally to exercise our greatest skill and supremest efforts. Every means to effect delivery may arise, from simple forceps to a Cesarean section. Every effort to tide the patient over an exceedingly critical period may have to be instituted. Fibroids at the fundus or at some distance from the dilating zone are, as a rule, harmless at this period and may possibly prolong the labor because of irregular uterine contractions. Those immovably fixed and blocking the pelvis will demand some form of operation to free the passage; whether this becomes a vaginal enucleation of the tumor or a deliberate Cesarean section depends solely on the situation of the tumor or upon the exigencies of the case. In any case it requires the deep thought of the obstetrician and the profound skill of the surgeon to overcome this dire condi-

tion. Other than these last mentioned complications we have little to fear from fibroids at this period. Experience teaches us that trouble is to be expected during the third stage of labor and during the puerperium. These dangers can be summed up in two words: hemorrhage and sloughing. Fibroids during and after labor must be handled gently and with care, avoiding as much as possible any traumatic insult. The occurrence of adherent placenta due to the concomitant endometritis that goes so often with fibroids is the first complication that may confront us. Forcibly digging away such an after-birth invites lesions of the tumor capsule proper, and the danger of cutting off its nourishment becomes evident. Where great difficulty is experienced in the enucleation of an adherent placenta under these conditions, I would rather be inclined to tightly pack such an organ with gauze with the placenta in situ, and thus await its natural exit (in perhaps 24 hours), than invite sepsis and sloughing by the extra hazardous and the forcible means of digging out this placenta. Yet, in one case, a total hysterectomy was forced upon me in order to deliver an adherent placenta in a badly diseased fibroid uterus, the attempt to deliver by the vaginal route having utterly failed. The treatment of hemorrhage, so often present, is one of relative simplicity, and this by means of the firm intra-uterine pack, applied by the gentlest methods possible, in order to avoid traumatism, which is always the greatest and most potent factor in inviting sloughing of the tumor by causing a lesion of its capsule. It is a very common experience with the writer in cases seen in consultation that these fibroids have been acting harmlessly until after the curette had been used for the removal of supposed secundines. So often has this been my experience that I would sound a note of warning that the use of the curette in a fibroid uterus recently pregnant or even in the non-pregnant condition, is one fraught with the greatest danger. Its use, in many cases, is absolutely not indicated, but your experience will probably be similar to mine: that just as soon as a puerperal woman has a rise of temperature, her physician at once, without much forethought, thinks first, last and all the time of the curette. To the average mind, fever at this time means sepsis from retained products of conception. The poor uterus stands the brunt of the attack, even though the condition is due to an entirely different cause. The curette has no place

in the fibroid uterus, whether puerperal or not. When we are sure, and this can be best certified to by the hand, that the temperature is due to a sapremia, such products in the uterus can and must be removed by the hand; and the curette, under no condition, should ever be employed. But usually temperature and pulse rise in a fibroid puerperal uterus are due to beginning necrotic changes in the tumor. If we are in doubt we surely can wait for symptoms indicative of these changes. The low temperature, the rapid pulse and the decided local pain in the uterus, with or without the fetid lochia, all make too evident what the lesion is. Intra-muscular and sub-mucous fibroids are those that give the best prognosis and the readiest means of extirpation. Examination of the interior of the uterus shows the lacerated capsule and the point of cleavage for a simple enucleation of the tumor. Treatment along simple aseptic lines and attempting to do too little rather than too much, is the best means of overcoming this complication. Sub-peritoneal sloughing fibroids are far more difficult to attack, and consequently make the prognosis worse. Total hysterectomy, whether from above or below, will be the operation of choice, the individual skill of the operator always deciding the avenue of attack. Drainage by the vagina should always follow operation for sloughing fibroids.

To make my position clear as to fibroids complicating pregnancy I submit the following résumé:

1. *Prophylaxis*.—Every fibroid during the child-bearing period, with few exceptions, should be attacked by surgical means.

2. *During Pregnancy*.—Safe fibroids, i.e., those beyond the dilating zone of the uterus, should be carefully watched. Every complication during pregnancy depending upon the fibroid should warrant our attacking surgically the condition, or, at least provoke us to the indication for emptying the uterus.

3. *During Labor*.—(a) Again safe tumors need watching. The resultant complications must be met energetically, but gently, as they arise, i.e., hemorrhage, tardy labor. (b) Tumors which cannot be displaced blocking the bony passage, warrant vaginal enucleation (seldom possible), or Cesarean section, followed by hysterectomy.

4. Sloughing and necrosis of a puerperal fibroid must not be mistaken for retained secundines. This doubt must be elimi-

nated by exploration with the clean aseptic hand. Retained secundines are always to be removed manually, and under no condition must the *curette* be employed, because of the great danger of laceration of the capsule, and consequent sepsis.

5. Sloughing and necrotic fibroids are always to be attacked surgically, either by enucleation or by a hysterectomy.

947 MADISON AVENUE.

A NEW OPERATION FOR CYSTOCELE.

BY

JAMES C. WOOD, A.M.M.D.,

Cleveland, Ohio.

(With eleven illustrations.)

EVEN a most cursory review of the literature of cystocele (or more properly colpo-cystocele) will prove to the investigator that the operations devised for overcoming prolapse of the anterior vaginal wall have been unsatisfactory. My own experience with the older operations, notably those of Stoltz and Sims, has been pre-eminently so.

Before it is possible for the anterior vaginal wall to project into the vagina in the form of a pouch constituting a cystocele, there must be either relaxation of the perineum, or relaxation of the pelvic floor. In complete procidentia of the uterus the relaxation may be due to the protruding uterus, rather than to injuries resulting from the passage of the fetal parts through the parturient canal. However, by far the larger number of cases of complete procidentia occur in women who have borne children, the procidentia and the cystocele following traumatism of the pelvic floor. This being so it becomes necessary in all instances to supplement the anterior colporrhaphy with operative work, having for its object restoration of the pelvic floor. I shall then first describe a method which I have devised for overcoming the cystocele, and then describe a method of repairing relaxation and injuries of the pelvic floor which I have now been following for 14 years.

Moderate degrees of procidentia of the anterior vaginal wall do not require surgical interference, provided the pelvic floor is prop-

erly restored. On the other hand, in those instances where the cystocele is so marked as to give rise to irritation of the bladder with chronic cystitis, or where there is complete procidentia, it is, I believe, necessary to narrow the anterior vaginal wall for the purpose of maintaining the uterus in proper position, and of overcoming the bladder irritation.

It is only necessary to observe the force exerted upon the anterior vaginal wall during emesis or coughing while the patient is in the lithotomy posture, to become convinced that a mere denudation of a limited area, and the coaptation of the mucous



Fig. 1. Dissection of Mucous Membrane from bladder after denudation.

edges with sutures, is insufficient to sustain the parts in normal position for any length of time. Innumerable operations have been devised to strengthen the line of union. Hirst has undertaken to overcome the difficulty by making a triangular dissection on either side of the central denudation, but I cannot see that this offers any advantage over a central dissection. Stoltz's purse string operation is notoriously inadequate, and if the operator will follow his cases thus operated, he will find that within six months from the time of the operation there is recurrence of the cystocele, which, beginning at the center of the puckered tissues, soon becomes even larger than before surgical work was resorted to.

A. Routh operates as follows: "The cervix is drawn down, an incision is made transversely in front of the cervix, and the bladder is stripped off the front of the uterus, as in the operation for vaginal hysterectomy. The anterior wall of the vagina is then seized by its cut edges and drawn down toward the vulva, and the bladder is stripped off its under surface and turned up, out of the way, above the pubes. To do this effectually, it may be necessary to open the uterovesical fold of peritoneum; but this is not always essential. An incision is then made longitudinally along the center of this vaginal flap running from the center of the transverse

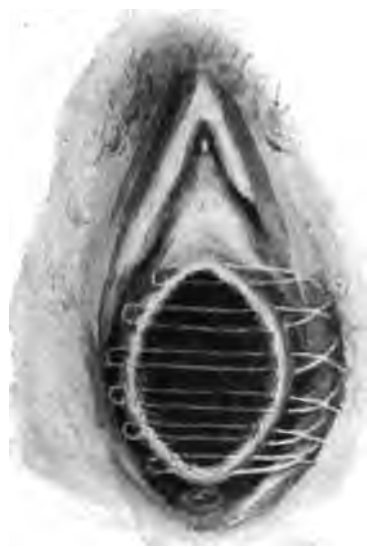


Fig. 2. Mattress sutures introduced.

incision to the neck of the bladder. The two resulting triangular flaps are then placed in position and made to overlap, and the redundant portions cut away along both the transverse and the longitudinal incisions. The amount of tissue removed will of course vary. The edges are now united. This is best done by drawing down and suturing a point in each lateral edge to the central point of the transverse edge. All that is then needed is that the raw edges should be united along both the longitudinal and the transverse lines. The vagina is thus shortened in both ways. It is a good plan to stitch the supravaginal cervix to the

vaginal walls; and this anterior vaginal fixation is essential if the uterus is retroverted and prolapsed. To do this, it is of course necessary to open the uterovesical pouch of peritoneum to get the bladder-wall out of the way, and so be able to stitch the body of the uterus to the vaginal wall."

Here again there is nothing more than an edge to edge approximation of the mucous surfaces, which is entirely inadequate to overcome the amount of tension placed upon the anterior vaginal wall. The technique impresses the writer as being unnecessarily complex.



Fig. 3. Mattress sutures tied.

F. Winckel has again modified the operation thus: None of the vaginal tissue is excised whatever, but a circular incision is made, as in Stoltz's operation, around a piece of oval shape mucous membrane corresponding to the prolapse of the anterior vaginal wall. The operator now dissects up the thickness of the vaginal wall from this circular incision outward while the circumcised flap is left firmly situated in its original position. The deeper tissues are next sutured together by silkworm gut, and the margins of the margins of the dissected mucous membrane united over the central flap by continuous catgut sutures.

This operation is open to the serious objection that it enfolds a mucous area underneath a raw surface. Then, too, like all that have been described, it comprehends nothing more than an edge to edge approximation.

Currier proposes to contract the vaginal wall sufficiently both in length and breadth as to distribute the tension upon two lines of union at right angles to each other, instead of one, as is done in the ordinary linear operation. This is undoubtedly an improvement over the old form of circular denudation, but, like the other



Fig. 4. Running catgut suture approximating edges of mucous membrane after tying of mattress sutures.

procedures given, does not afford anything like adequate protection.

Cystopexy is an operation described by some of the French surgeons for overcoming cystocele whereby the anterior wall of the bladder is fastened to the abdominal wall through an abdominal incision. The bladder is first injected with 5 ounces of boric acid solution. A transverse incision is then made two and one-half inches long in the hypogastric region; two catgut sutures are carried through the lower ends of the wound, except the skin, then through the outer layer of the anterior wall of the bladder

and through the upper edge of the wound. These are tied and the skin surface stitched together.

It does not seem to the writer that so radical an operation as this is necessary in dealing with cystocele, unless indeed there is complete procidentia of the uterus, in which event ventral fixation will accomplish all that it is possible to accomplish by so-called "cystopexy."

Freund has undertaken to narrow the vagina in complete procidentia by a series of sutures which encircle it at regular intervals throughout its length.



Fig. 5. Operation in complete prolapse. Mattress sutures introduced but not tied.

The technique which I suggest and have followed in five instances will, I believe, prove superior to the methods described. This statement is made with full consciousness that time alone will demonstrate its practicability and utility. I give it to the profession at this time that others may experiment with it, and relegate it to its proper sphere of usefulness. The operation is so simple that it may have been performed by others. If so, I am unable to find any record of it. I have simply utilized the principle which has been followed in other departments of surgery—notably in operations for hernia. I proceed as follows:

The ordinary circular denudation is made as shown in Fig. 1.

This denudation should correspond in size to the size and degree of prolapse of the cystocele. While in conformation it should be oval, ordinarily it should be wider above than below, because in nearly all instances there is a greater degree of relaxation in the upper part of the vagina than in the lower. After the denudation is made the mucous membrane is dissected from the bladder to the extent of three-eighths of an inch entirely around the denuded area. The dissection can be made either with a scalpel or with scissors, as the operator may elect. Mattress sutures are now passed in such a way that when tied they will

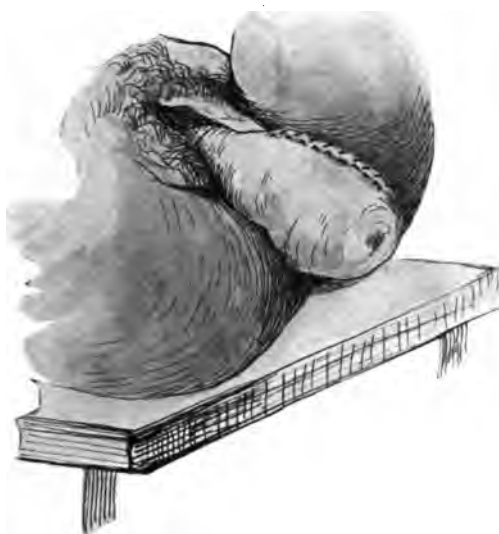


Fig. 6. Complete procidentia showing mattress sutures and continuous suture tied.

make a bridge of tissue three-eighths of an inch in depth, which is composed of the dissected mucous membrane lifted from the bladder. (Figs. 2 and 3.) The edges of this column of tissue are now brought together with a running catgut suture, as shown in Fig. 4.

If there is a urethrocele, or if there is incontinence of urine because of weakness at the internal meatus, the dissection is extended along the urethra for a sufficient distance to support the neck of the bladder as well as its base.

The objection will at once be made that this column of tissue will remain as a hindrance to intercourse, or possibly will be

sufficiently large to excite vaginal irritation. This objection was considered by me, but, judging from the degree of stretching which takes place in the ordinary operations for cystocele, I reasoned that it would become sufficiently absorbed not to give rise to trouble. In one case operated upon six months ago my prediction has proved true. There remains a firm ridge of tissue

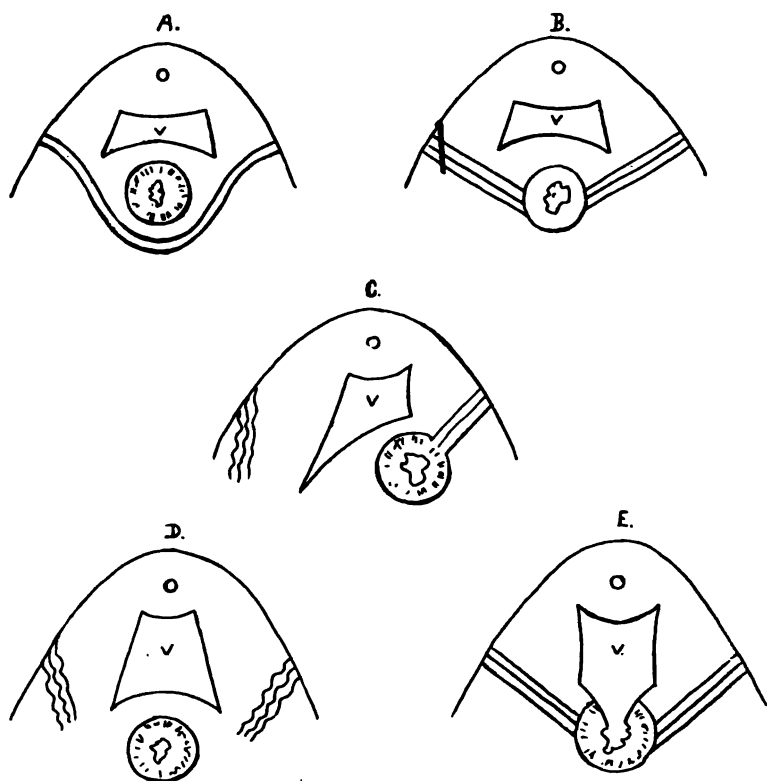


Fig. 7. Showing function of Levator Ani Muscles.

- (a) Fibres drawing rectum toward vagina narrowing perineal body.
- (b) Showing attachment of fibres to rectal wall.
- (c) Fibres separated on right side. Rectum drawn to left.
- (d) Fibres separated on both sides. Vaginal orifice relaxed.
- (e) Tear into rectum. Fibres intact.

not larger than a goose quill, but sufficiently firm entirely to overcome the prolapse.

Figures 5 and 6 show the technique of the operation where the uterus is entirely without the vagina. In these cases I believe it absolutely imperative, in order to secure lasting results, to narrow the anterior vaginal wall. This of course is to be supplemented by

necessary cervical work and reparation of the pelvic floor, which is always relaxed, and by one of the operations to hold the uterus in front. It is a mechanical impossibility permanently to cure a complete procidentia of the uterus without sustaining the fundus of the uterus sufficiently anteriorly so that the intraabdominal pressure is directed upon the posterior surface of the organ. Ventral fixation has been, in my hands, so entirely satisfactory in contending with complete procidentia, that I rarely resort to any of the operations having for their object the shortening of the round ligaments.

As a matter of fact, in the larger number of instances of complete procidentia, the appendages are so much diseased as to require removal. When removed it is of course not necessary



Fig. 8. Skin incision in flap-splitting operation.

to give consideration to the possibility of pregnancy and the complications that might arise from ventral fixation. Always when an ovary or a portion of an ovary is left behind, I attach the uterus to the abdominal wall by passing the stitches through the anterior surface of the organ; whereas, if the ovaries are removed, the result is more lasting by passing them well over on the posterior surface. By keeping the stitches in front, the fundus can rise in the pelvis during pregnancy without serious inconvenience. I am aware that a few cases of dystocia have been placed on record resulting from ventral fixation. These instances are, however, the rare exception to the rule. I have now had nine cases of pregnancy following ventral fixation without apparently unusual suffering, either during pregnancy or during labor.

The operations devised for overcoming relaxation of the pelvic floor are even more numerous than those devised for overcoming cystocele. The principle in all is to bring together the divided ends of the levator ani muscles, together with their fasciæ, which constitute the chief support of the pelvic floor. The operation most in vogue is Emmet's lateral operation. It is open to the very great objection that it brings the divided ends together in the sulci of the vagina, instead of in the median line, where nature first placed them.



Fig. 9. Separating vaginal and rectal flaps with finger.

The results of the relaxation are well shown diagrammatically in Fig. 7, taken from Kelly. A and B show the manner in which these muscles sweep around the rectum, drawing it toward the vagina, the vaginal orifice being thus drawn well up under the pubic arch. If the separation takes place on one side only, we get the condition shown in C; if on both sides that shown in D. If it occurs into the rectum, muscular separation does not necessarily take place, and this will explain why, in so many instances of complete tear, the patient suffers less from the "bearing down" sensation than she does when there is sub-mucous separation, and the perineum is actually increased in depth because the rectum

falls away from the vagina. In order to overcome the relaxation I have modified the ordinary flap-splitting operation as follows:

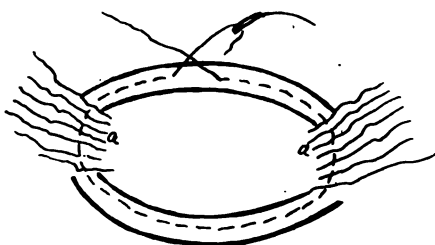


Fig. 10. Vaginal suture introduced but not tied.

(a a) Retracted fibres of levator ani muscles caught in circular suture.

A semi-circular incision is made with elbowed scissors, as shown in Fig. 8. This incision extends through the several layers of fasciæ. The flaps are now caught in forceps, one above and one below, and the dissection is completed with the finger well into the crest of the rectocele. (Fig. 9.) If now a suture is passed, beginning at the crest of the rectocele, first through the vaginal flap and buried in the tissues from left to right, being brought out and reintroduced as often as may be necessary to complete the



Fig. 11. Introduction of external sutures.

circumference of the wound, finally being brought out at the point of entrance, it will when tied necessarily bring the divided levator

ani fibres together in the median line. From one to three vaginal sutures thus introduced will convert the vagina into a mere slit in the pelvic floor, which it should be. The last suture is introduced within three-fourths of an inch from the vaginal orifice. The vaginal flap should be kept tense while these sutures are being passed, so that the posterior vaginal wall will be perfectly smooth when the operation is completed.

The superfluous tissue is finally removed from the upper angle of the wound, and a teat of tissue is also removed from the lower angle of the wound. By doing this all scar tissue is done away with, the perineum is left smooth when the operation is finished, with its surface slightly depressed, as is the case in nulliparous perinei. The wound may now be closed from the perineal aspect as the operator elects. Personally, I here use interrupted catgut sutures, as shown in Fig. 11. Instead of these, a buried continuous suture may be used, the skin being closed by a subcuticular suture, according to the Martin method. I am inclined to think that interrupted sutures swept around the outer aspect of the wound approximate the fasciæ and muscles better than does the buried suture. At any rate the most important feature of the operation is the proper introduction of the vaginal sutures. If care is taken not to tie the external sutures too tightly, there is but little pain and no sloughing.

This operation, which was fully described in the last edition of my text-book, has given such entire satisfaction in my hands that I can recommend it to the profession with a great deal of confidence.

816 ROSE BUILDING.

TRANSACTIONS OF THE NEW YORK OBSTETRICAL SOCIETY.

Meeting of November 16, 1904.

The President, J. RIDDLE GOFFE, M.D., in the chair.

TUBO-ABDOMINAL GESTATION.

DR. E. B. CRAGIN presented a photograph and the specimen of this condition occurring in a primipara, 34 years of age, who had been dilated and curetted for sterility 7 years previously.

Vomiting and pain had been present at intervals throughout the pregnancy. A diagnosis of full term ectopic pregnancy with dead fetus was confirmed by the operation. The sac was found adherent to the abdominal wall and floor of the pelvis, and roofed over by coils of adherent intestine. The entire sac containing the placenta was enucleated from the adherent surroundings until it was only attached by the upper portion of the broad ligament, which, forming a pedicle like an ovarian cyst, was ligated, and the entire sac removed. No denudation of the peritoneum had occurred, so that the abdominal wound was entirely closed and the patient made an uneventful recovery. Further examination of the sac showed the amnion and chorion to be covered by the extended tube on the proximal side, while the distal portion had been reinforced by the adherent coils of intestine and parietal peritoneum.

He therefore considers the case to be one of tuboabdominal gestation, in contrast to the three cases reported by him in 1900 to the American Gynecological Society, and to the one subsequently reported in the same year to the New York Obstetrical Society, all of which were of the intraligamentous variety.

RETRORECTAL DERMOID OF THE PELVIC CONNECTIVE TISSUE.

DR. HIRAM N. VINEBERG presented a dermoid cyst that he had removed from a patient, 35 years of age, who presented herself with a complete prolapse, rectocele and cystocele one year subsequent to an instrumental delivery. There was also to be felt behind the rectocele an elastic tumor extending to the left and behind the rectal wall.

A probable diagnosis of dermoid of the subperitoneal connective tissue was made, but only an operation for the uterine prolapse was done at this time, leaving the rectocele and tumor. One year later the patient returned with rectocele larger and the tumor of double its previous size. After failing to remove the tumor

through the vaginal wall, it was enucleated through an incision extending from the coccyx to the anal margin.

The rectocele was then repaired.

FULL TERM EXTRA-UTERINE PREGNANCY.

DR. VINEBERG presented such a specimen that he had removed from a patient 28 years of age, who had suffered from abdominal pains at irregular intervals throughout the pregnancy.

The loss of flesh had been so marked that a diagnosis of malignant growth was possible. Although there was considerable hemorrhage and difficulty in removing the sac, it was all enucleated except a small piece which was sewed into the abdominal wound. Recovery and closure of the fistula in five weeks.

SIMULTANEOUS EXTRA- AND INTRA-UTERINE PREGNANCY.

DR. VINEBERG related the history of a patient to whom he was called on account of an attack of pain in the right side of the abdomen, which resembled both appendicitis and gall-stone colic. From the history and examination, however, he suspected an ectopic pregnancy. A distinct tumor behind the uterus disappeared during an examination under anesthesia, and while performing a curettage by which the material of a four to five weeks' pregnancy was removed, the patient collapsed.

An incision in the posterior fornix revealed free blood, and an immediate laparotomy without the ordinary preparations or instruments, revealed a ruptured tubal pregnancy.

Recovery.—Microscopical examination showed chorionic villi in the tube and in the material removed from the uterus.

DR. E. B. CRAGIN referred to a case depicted in the American Textbook of Gynecology, upon which he operated one night for ectopic pregnancy, and the next day a fetus with its membranes was passed from the uterus.

DR. VINEBERG recalled two cases of intra- and extra-uterine pregnancy. In one the diagnosis was not made until labor began, when the tubal rupture occurred.

Subject of the evening: TOXEMIA OF PREGNANCY.

DR. JAMES EWING (Guest) gave a lantern demonstration and read a paper entitled "THE PATHOLOGICAL ANATOMY AND PATHOGENESIS OF THE TOXEMIA OF PREGNANCY."

(See original article, page 145.)

DR. J. CLIFTON EDGAR read a paper entitled "SOME CAUSES FOR PUERPERAL MORBIDITY ANTEDATING DELIVERY."*

DR. W. S. STONE read a paper entitled "THE FETAL MANIFESTATIONS IN THE TOXEMIA OF PREGNANCY."*

DR. E. B. CRAGIN stated he was more impressed with the fact that the three complications of pregnancy—pernicious vomiting, acute yellow atrophy and eclampsia—all belong to the same group, and are due to a toxemia. He recalled several cases diagnosed as eclampsia which the pathologist reported as having the lesions of acute yellow atrophy.

DR. G. L. BRODHEAD thought that cases of pregnancy could not be observed too closely from the time of the first skipping of the menstruation until full term is reached.

DR. H. N. VINEBERG thought that to say as Dr. Edgar did, that patients who had had a severe toxemia should not be allowed to conceive, was too strong a statement, as in his own experience he had seen several cases go through subsequent pregnancies without any toxemic symptoms.

Meeting of December 13, 1904.

The President, J. RIDDLE GOFFE, M.D., in the chair.

DOUBLE FIBROMATA OF THE OVARIES.

DR. BACHE MCE. EMMET presented two solid tumors of the ovaries—one the size of a full term fetal head, the other of a lemon—he had removed from a single woman, 44 years of age, whose menses had ceased seven years previously. The appreciation of the presence of a tumor for two years, occasional pains, lately becoming almost continuous, and moderate emaciation were the chief symptoms for which she sought relief. The operation showed the larger tumor to be firmly adherent to the omentum and to be twice twisted upon its pedicle. The smaller tumor was not adherent. The tumors were so markedly calcified that they had to be cut with a saw. A specimen removed for histological examination has been treated for two weeks with sulphuric acid to render it fit for microscopic section.

DR. CLEMENT CLEVELAND asked if a microscopical examination had been made of these tumors, as several cases he thought to be fibroids, proved by microscopical examination to be sarcomata.

Most of his cases were accompanied by ascites, and he would also like to ask Dr. Emmet if ascites were present in his case.

He had recently removed a small pedunculated fibroid of the uterus, the surface of which was calcareous, but its center was soft and necrotic. The menorrhagia from which the patient suffered was found to be due to a partially submucous tumor, so that he thought it is possibly wiser to advise laparotomy in a larger number of such cases than is the present custom.

THE PRESIDENT asked if these were the ovaries themselves, or if they were simply attached to the ovaries as their seat of origin.

DR. GEORGE E. BREWER (Guest) asked if calcified fibromata of the ovary are common, as he had removed a tumor much like the one presented by Dr. Emmet, from a woman 73 years of age, who had an acute intestinal obstruction from an incarceration of the tumor in the pelvis. A carcinoma of the sigmoid was afterwards found, which was removed. A colostomy was performed. Subsequent examination showed the ovarian tumor to be a sarcoma,

which evidently occurred independently of the carcinoma of the sigmoid.

DR. EDWARD REYNOLDS (Guest) made a plea for a more exact pathological examination of apparently simple fibroids than has usually been made. He stated that for three years he had had every fibroid submitted to gross serial sections, and if any were at all suspicious they had been submitted to microscopical examination.

He had discovered in this way that many cases of apparently benign tumors showed centers of sarcomatous degeneration, although experience had shown that one should not be too prompt in giving too much clinical significance to such pathological phenomena.

DR. EMMET, in closing the discussion, said that calcified fibromata of the ovary are not common. There was no ascites in his case, although he thought the presence of the twists in the pedicle might itself cause fluid to be present.

No ovarian structures were present other than the tumors. The presence of the calcification, he thought, pointed to a slow growth and precluded the possibility of its being sarcoma.

He referred to a fibro-sarcoma of the ovary that he had previously reported to this society, in which, from the solidity of the tumor, it was first thought no sarcomatous tissue existed.

He also recalled a case which he first thought to be a uterine fibroma, but which from its extensive connections and the presence of a rectal stricture, he finally concluded was malignant and did not attempt its removal. Subsequent observations showed this diagnosis to be correct.

VENTRAL FIXATION AND LABOR.

LAPAROTOMY AT TERM TO FREE ADHESIONS.

DR. R. L. DICKINSON.—An active, slender lady of 34, referred by Dr. Franciscus, who had had two difficult labors, was operated on by me at Brooklyn Hospital, in April, 1902, for an extreme retroversion of a very large uterus with laceration of the cervix and perineum. Two chromic gut sutures were passed through the middle of the fundus, a very little back of the top of it, and through the abdominal peritoneum alone by the method of Kelly. The peritoneum was closed in a purse-string and the other layers sutured with chromic gut. In convalescence no temperature rise occurred. A small, late, subcutaneous hemorrhage gave some pain in the wound and rather wide discoloration. A small clot was turned out, but no suppuration ever occurred. On the tenth day she informed me she had had much pain for two days. Though she had urinated often, and three to four ounces at a time, the catheter brought away thirty ounces of urine. Some months later the uterus remained thick, but with a two and one-half inch cavity. It lay rather far forward and upward, and lacked the usual free play of the fundus.

Pregnancy began 17 months after operation. The fundus stayed close to the thin abdominal wall, with only a little mobility. During pregnancy a dragging was complained of, with painful tension toward the end. A month before term the uterus was found symmetrically enlarged and extremely tense, the scar depressed, the child L O P, its head above the inlet. Below the head and behind the pubes was a soft mass that might be fluid or might be the thickened and vascular anterior uterine wall. The left round ligament, very short, lay to the left of the scar, together with an ovary. The broad ligament is also pictured here on my diagram of that date. The right ovary was guessed at, above the right groin.

The patient re-entered Brooklyn Hospital at eight and one-half months (June 8, 1904). The smallest Voorhees bag was passed into the cervix, and the largest into the vagina, and left for eight hours, in order to induce labor. Moderate activity developed. The general uterine tension relaxed between pains, when a rigid band about two inches long was readily felt beneath the upper end and about two inches above the two-inch scar. The ovary and broad ligament were marked to the left of the scar and nearly level with it. The child moved about freely. The internal os was out of digital reach, at about the level of the promontory, and unyielding. The cervix was long.

On the next day, mild pains developed; on the following day little activity could be induced; on the fourth day (June 11th) the findings were confirmed under chloroform, and the ligament cut.

The new incision, an inch long, was made over the tense strap that could be felt on the uterus, above and to the left of the original cut. No real ligament was present. An adhesion, one inch long by one-half wide, dragged obliquely downward on the uterine peritoneal covering and upward on the abdominal layer, giving the sensation of a finger-thick ligament, but actually being a very edematous, vascular peritoneal scar. To it, above, the omentum was delicately attached, and this had probably caused much of the distress. An inch to the left of the adhesion and level with its lower edge, was the left cornu, with a flattened ovary and broad ligament. This ligament was turned downward and forward. The other cornu was not searched for. A double-armed carrier swept two stout catgut ligatures around the finger-thick adhesion. These were tied and the pseudo-ligament cut. Its uterine end was covered in with a Lembert suture, and released. Four figure-of-eight silkworm stitches over bolsters and tied in bowknots held the abdominal wall, and each layer was sutured with gut as well. In six minutes the stump on the fundus had climbed three inches, and the return to the normal was almost spectacular. Pains began spontaneously in five hours, and delivery occurred under Dr. Pomeroy's care after an easy labor ten hours later. No harm came to the incision, and the convalescence was smooth. The uterus in these six months following delivery shows no tendency to retrovert.

Though it takes long to tell it, freeing of the adhesions is swift and simple. Of the three methods I have tried for these extreme cases of fixation—manual dilatation with forcible extraction, Cesarean section, and freeing the adhesions, the last is infinitely preferable. In those cases in which the cervix is held at or above the promontory, where a greatly thickened mass of anterior uterine wall blocks the space behind the pubes, and the fundus is solidly fixed low down, forcible delivery by the contorted passages is productive of severe shock and injury. Cesarean section was easy. It is now proved unnecessary. My weak little toxemic patient died, as reported in *AMERICAN JOURNAL OF OBSTETRICS*. A tiny incision, a double ligature on the ligament, a trusty suture of the cut takes but a few minutes. Then the uterus, previously distorted by an enormous bay window of thinned rear wall, seems to regain form, function, and balance, and do its work handily—the wound perfectly guarded by its silkworm sutures, can be disregarded in the labor.

Let us clearly understand that the minor degrees of fixation and deformity do not require the measure I am advocating. In this aggravated type, however, as Bodie long ago showed, the adhesions may be cut and the deformity corrected by a simple method. It is to be noted that neither in the case in which Cesarean section was done, nor in my own, was fixation desired. Intending to produce a slender ligamentous attachment of the fundus, a true suspension, in each case a fixation developed. Gynecologists clearly recognize the difference, but the general profession classes all abdominal attachments of the fundus to the abdominal wall as fixations, and rigid fixations at that. Also, it is to be presumed that Dr. Kelly and I can find the middle line with our sutures. Yet in each case the uterus bulged asymmetrically to make room for its contents.

DR. E. B. CRAGIN.—We all admit that occasionally the complications referred to by Dr. Dickinson, viz., dystocia following ventrofixation occurs. I believe, however, that the method of treatment has to depend upon the results of the ventrofixation. In the case Dr. Dickinson had to deal with, he was fortunate in finding a ligament which was easily severed. In two cases that I have seen, the whole anterior wall of the uterus was adherent to the abdominal wall, and this had to be dissected away. In such cases there is no choice between methods, but Cesarean section must be performed. I am sure though, that if I had to do with such a case as that presented by Dr. Dickinson, I should have done as he did. On the other hand, where the whole anterior wall of the uterus is firmly attached to the posterior surface of the anterior abdominal wall, there is no ligament to divide as proposed. We must always deal with the cases according to conditions found. In both the cases which have come under my care, suppuration of the wounds had occurred at the time of the ventrofixation, and this was the cause of the firm adhesions of the anterior wall of the uterus and its fundus, to the abdominal wall.

DR. H. N. VINEBERG.—I am reminded of a case which I presented to the society one year ago in which, following an operation for an ectopic pregnancy, adhesions had formed between the uterus and abdominal wall. I saw this patient on the third day of labor and there was no advance made. The cervix was beyond the promontory and could not be reached with the fingers per vaginam. She was brought into the hospital and then there was noticed a small circular defect in the abdominal wall where a drain tube had been passed. The membrane covering this became ruptured in scrubbing up the abdomen, the peritoneal cavity was opened and a small portion of omentum presented. I then tried to break up the adhesions with my finger introduced through this opening and succeeded. Then I had an assistant push up the fundus and I brought the cervix down with the hand introduced into the vagina, delivered the woman of a full-term living male child per *vias naturalis*, after fully dilating the cervix with the hand. The woman made a good recovery. I suggested that in a similar case, with slight adhesions, the abdomen might be opened, the adhesions broken up, and the woman delivered in the natural way, without doing the Cesarean section, as had been done heretofore for such abnormalities.

DR. CLEMENT CLEVELAND thought that the opportunity should not be lost by those who are opposed to either the operation of ventral fixation or suspension of pointing out that such a case as Dr. Dickinson has here reported offers a very potent argument against either of these operations.

DR. B. MCE. EMMET.—I wish to still further emphasize Dr. Cleveland's remarks with the exception of stating that we should not do away with this operation absolutely; it has its benefits. It is well established that where future pregnancies are expected one should never anteverte the uterus and attach its posterior surface to the anterior abdominal wall; when the fundus is utilized for suspension, or when attachment is made by the anterior uterine surface, as it was practiced in the early days of this operation, accidents in childbearing are less likely to happen. Furthermore, when it is intended to make a slight suspension, one should be mindful not to abrade the peritoneal surface extensively either of uterus or abdominal wall. Such lack of care, combined with the habitual tight binder, may well establish very firm adhesions. There are many cases in which the temptation is strong, after breaking up adhesions, to put a couple of stitches in the fundus and through the fascia to guard against a retrodisplacement; it can be done through a very small opening, and is certainly justifiable in many instances. I do not think that this operation should be entirely tabooed.

DR. R. L. DICKINSON, in conclusion, said these accidents are relatively rare and the arguments are not sufficiently strong to make us abandon the operations. He referred to cases he has reported of patients going through the pregnancy smoothly.

ANTEPARTUM MEASUREMENT OF THE FETAL HEAD.

DR. W. S. STONE made a preliminary report upon the method of measuring the fetal head with the ordinary pelvimeter. The two poles of the head—the occipital and the frontal—are first palpated in the ordinary way for determining the position. An assistant standing at the foot of the table, places the ends of the pelvimeter between the ends of the ring and middle fingers of the palpating hands and presses them in as the one who is palpating directs, and reads off the measurement upon the scale. He has now collected 42 cases in which this method has been tried, and the measurements compared with the occipito-frontal measurements after delivery—twenty-seven proved to be exactly right; thirteen showed an error of .25 c.m.; two showed an error of .50.

Further measurements are to be made, and a more detailed report of the cases will be published at another time.

NEPHRECTOMY FOR EARLY TUBERCULOSIS OF LEFT KIDNEY AND
STRICTURE OF THE INTRAVESICAL PORTION OF THE
CORRESPONDING URETER.

DR. H. N. VINEBERG.—The patient from whom this kidney was removed 15 days ago is the wife of a physician. She is 30 years old, had one child 10 years ago, and had trachelorrhaphy performed by me five years ago for a deep tear in the right side of the cervix. Apart from this she had enjoyed good health until the early part of last summer, when she complained of lassitude, tiring easily and general malaise. Her temperature ran about 100° to 100.5° in the evening. After she had been suffering in this way for about a fortnight, the doctor asked me to see her. I made a very careful and thorough examination, with negative results excepting a moderate prolapsus of the right kidney. The doctor told me he had repeatedly examined the urine and found nothing abnormal, save a trace of albumen. The patient was suffering from marked constipation, and in the absence of any physical signs I thought that might account for her indisposition and slight albuminuria, and placed her upon appropriate treatment. She seemed to improve promptly, and then went to the mountains for the remainder of the summer. During this time she felt very well and gained considerably in weight. A couple of weeks after her return to the city she began to suffer again as she had in the early part of the summer and the doctor noticed now that the urine was turbid and contained pus. When he told me of this I questioned if there were any bladder symptoms and he replied that there were none save a slight spasm at the end of micturition. I had the urine examined at once for tubercle bacilli, and characteristic groups of them were found in moderate abundance, together with a great many pus and epithelial cells. There were no casts; the reaction was acid, specific gravity 1014, and there was a trace of albumin. I learned from the patient that micturition of late had

been more frequent than formerly, and that she had to get up twice during the night. There was no pain with the act, but, as already stated, a feeling of spasm which she said was located in the right side of the bladder. She had little or no pain in either loin, but whatever pain or discomfort she did have was located in the *right* loin. The right kidney was readily palpable, being prolapsed, as already noted, and seemed to be slightly enlarged and moderately tender on deep pressure. The lower pole of the left kidney could just barely be felt on very deep inspiration, and no tenderness could be elicited on the deepest pressure.

Everything pointed to a tuberculosis of the right kidney. It was a surprise, therefore, for me to find on cystoscopy (Kelly method) a perfectly normal looking right ureteral orifice, while the left ureteral orifice presented a nipple-like projection with a slit in the center. The trigonal area was considerably injected, and a few small tubercles were seen irregularly scattered in the intraureteral space. The remainder of the bladder mucosa seemed normal. On trying to pass a catheter into the left ureter, the catheter became arrested about an inch from the bladder surface. The right ureter was readily entered and 15 c.cm. of urine collected from the right kidney in fifteen minutes. This urine was practically normal, excepting that it contained considerable blood as a result of the traumatism from the passage of the catheter. The urine collected from the bladder during the same time and consequently from the left kidney showed a fairly heavy deposit of pus and characteristic groups of tubercle bacilli were found.

It was evident, therefore, that we had to do with a tuberculosis of the left kidney, with a secondary stricture of the intravesical portion of the left ureter and a slight secondary tuberculosis of the bladder. To make sure of my diagnosis, I had Dr. Follen Cabot examine the patient with his cystoscope, without my telling him, in advance, of my findings. He found precisely the same conditions and, after a second trial and by using considerable force, succeeded in overcoming the stricture of the left ureter and in passing the catheter beyond. The urine drained directly from the left kidney was examined by Dr. F. F. Sondern, who made the following report on it: Volume, 24 c.c. in 20 minutes; acid reaction; specific gravity, 1009; large amount of pus forming bulk of deposit; numerous characteristic groups of tubercle bacilli; urea, 1.018 per cent.; freezing-point, 0.89° C. Immediately afterward I inserted a catheter into the right ureter and the urine obtained direct from the right kidney had no abnormal ingredients, but showed a very low specific gravity, which was to be explained by the fact that the patient had been given two tumblerfuls of water during the examination and was extremely nervous. I now advised the removal of the left kidney as early as possible. After a few weeks of deliberation on the part of the patient and her husband, my advice was accepted. Arrangements were accordingly made for the operation. On the day prior to the one set for it, I called at the house to see that everything was in readiness,

and now for the first time my moral courage almost deserted me. The patient was feeling very well, the bladder symptoms had disappeared since the last examination, evidently owing to the dilatation of the ureteral stricture, and she asked in rather a reproachful tone whether she was doing wisely in subjecting herself to so grave an operation in the absence of any symptoms and when she was feeling so well. The doctor, by his looks rather than by his speech, reminded me that nephrectomy for renal tuberculosis carried with it a mortality of from 11 per cent. to 18 per cent. in the hands of the most experienced and skilled operators. I told the patient she could still withdraw her consent, and advised that another consultant be called in, that the facts be laid before him, and to hear what advice he would give. Accordingly a prominent general surgeon was sent for. He examined the patient carefully. He could not palpate the left kidney, nor elicit any pain on deep pressure over its site, but on the strength of the data I furnished him, he advised immediate nephrectomy. This was carried out, at the patient's house, on the next day, as had been originally planned.

The kidney lay very high up, pretty well above the border of the ribs, but was delivered without any very great difficulty, and was removed in the usual manner. The ureter was isolated at the outset, cut at first between two ligatures about 2 inches from the kidney. It looked normal to the eye, still I removed it as far down as the pelvic brim, and cauterized the end with pure carbolic acid. The wound was closed with tier sutures, excepting a small area at the lower angle where a gauze strip had been passed. This was removed in 48 hours and the entire wound healed by primary union. The kidney on being cut open showed an abscess the size of an English walnut, situated equally in the cortical and medullary portions and at the junction of the lower with the middle third. The abscess involved the posterior wall chiefly and had thinned it very considerably. The pelvis appeared normal to the naked eye, as did also the remainder of the kidney.

NEPHRO-URETERECTOMY FOR TUBERCULAR DISEASE WITH A DESCRIPTION OF A NEW TECHNIQUE FOR THE OPERATION IN WOMEN.

Under this title Dr. EDWARD REYNOLDS, of Boston, read the paper of the evening. He earnestly deprecated the indiscriminate application of nephrectomy to all cases of renal tuberculosis, and would only select cases for operation after careful study and usually after long preparatory and constitutional treatment. He divided the cases into two classes: (1) Those in which the course is rapid and the constitutional failure marked. As such cases usually have tubercular foci outside of the urinary apparatus, he would treat them constitutionally and would only operate for the relief of otherwise irremediable suffering. While the chances

of cure in this class by constitutional treatment are few, he noted such improvement in two cases that operations were refused. (2) Those in which the progress of the disease is slow, the constitutional condition is fairly good, and in which the tuberculosis is not only limited to the urinary tract, but also can be demonstrated by cystoscopic examination to be limited to one kidney, its ureter and perhaps the bladder. In this class of cases he considers that in a combination of constitutional and operative treatment a radical cure made be expected.

The selection of the cases for operation should depend upon repeated examinations, and, if the bladder is diseased, by a preliminary local treatment before catheterization of the uterus is attempted.

Of a large number of cases of renal tuberculosis he has operated upon eight. Two belong to the first class and were distinctly improved for some time. Six belonged to the second class; nephrectomy upon two; one had a nephrectomy with subsequent ureterectomy; three had nephro-ureterectomy. One suffered from prolongation of symptoms due to a vesical cause, but at the end of four years was in an improved condition of health. Of the five others, four were in perfect health at periods ranging from 18 months to 7 years. One had a subsequent tubercular abscess, but is again convalescing. All of the eight made surprising gains in weight, color and strength during the first six months following the operations.

After performing nine nephrectomies for tubercular and other suppurative diseases, and seven complete nephro-ureterectomies. Dr. Reynolds is convinced that whenever a renal tuberculosis is held to indicate nephrectomy, the ureter should also be completely extirpated, because after the incomplete operations the symptoms persist longer, and in two of nine cases he had been obliged to subsequently perform ureterectomy. He thinks the superiority of the complete operation has been shown especially in tubercular disease, in which the ureter is so often the seat of extensive disease.

The chief features of Dr. Reynolds' technique are the doing away with the traditional nephrectomy pillow, and so placing the patient that through a moderate incision, about three and one-half to four and one-half inches long, extending from one-half inch anterior to the lower costal cartilages, downward and outward to a point about an inch inside of the anterior superior spine, the entire operation can be performed under the eye by the aid of retractors and the dilatation of the wound from the negative abdominal pressure.

The patient is placed upon her side on a hard table with the legs extended nearly in line with the body, and is rolled as far backward as is possible without losing the negative abdominal pressure, which is shown by the appearance of a transverse concavity in the outline of the abdominal wall. A thin patient is best placed

almost exactly on the side, while a stout one should be rolled farther backwards and may even need to have the hips raised by a cushion. The table may be advantageously tilted at its foot.

After division of the muscles and fascia a retractor in the upper angle of the wound enables the operator to recognize the perinephritic fascia and free the kidney, which after removal of the retractor is delivered, if the vessels are of the normal length. If not, it may be pressed posteriorly and elevated by the fingers of an assistant so that the vessels may be recognized.

The kidney is then fastened to the edge of the incision in order to prevent any injurious dragging upon the ureter during the remainder of the operation. The ureter is freed by separating the peritoneum from the lateral abdominal wall until the pelvis is reached, when a Sims speculum with a long and flat blade is introduced into the lower angle of the wound, and the ureter is freed under the eye to its insertion into the bladder. The stump is disinfected with 95 per cent. carbolic and the entire wound is usually sutured without drainage. If the ureter is so diseased that it is broken during the operation, the wound is drained through the vagina.

Dr. F. TILDEN BROWN.—This topic has long greatly interested me, and I want to thank you, Mr. President, for the invitation which has enabled me to hear Dr. Reynolds' very valuable contribution to it. I believe I have tried all of the various postures for nephrectomy among them that just described by the reader, differing a little, however, by employment of more or less cushioning under the sound ilio-costal space, for the purpose of uplifting the operative field in the corresponding opposite space; but in my case the cushion has been used to render the kidney more accessible, while in Dr. Reynolds' operations its omission is a factor in the improved accessibility of the lower part of the ureter, in that its absence permits favorable falling away of the intraperitoneal viscera. Except in one instance I have never done this complete nephro-ureterectomy, and for several reasons, mainly, in all probability, because in some of my early operations ureters which were ostensibly involved were left, and these cases progressed so well as to suggest that such organs on becoming functionless were rendered more or less inert as foci of tuberculous dissemination. In other and later cases, where it was realized that surgical precepts would be better observed by a total removal of the ureter, an appreciation of what this involved of added traumatism and protracted operations led to doing more, but only what was quite available. Thus in two cases the ureter was severed between seven and nine inches from the kidney, the dip at the sacral brim limiting easy accessibility. In one of these cases the ureter, flaccid and dilated throughout, was studded on its interior with tubercles, and where cut was large enough to admit the little finger. In the other just the opposite state was met, hard, thickened coats and constricted lumen. In both of these women, operated on at nearly the same time five years ago, no

evidence of urinary tuberculosis is seen to-day, unless a suggestion of Addison's disease in one of them might be called such.

I might refer to one case where for a while great regret was felt that the ureter had not been removed; this was a female of 27, the picture of health and beauty, with symptoms only recently recognized as distinctly urinary. Ureter catheterization at once showed a right renal tuberculosis, and at the same time the mouth of the corresponding ureter was seen to be involved in some superficial ulceration. A fact not divulged until after nephrectomy was that nine years before a small segment of the right breast had been removed for a tumor which examination proved tuberculous.

The kidney, with only an inch of ureter, was removed through a small transverse incision under the ribs, a rapid operative convalescence was followed by immediate climatic change, but the vesical symptoms, at first so much relieved by the operation, became quite as troublesome again. The cystoscope showed increased size and depth of the bladder lesion mainly behind and in the right ureter. At consultation ureterectomy and partial cystotomy was considered, but a compromise was accepted in suprapubic cystotomy to permit curettage. In anticipation of this I had had several long-handled curettes made, the various shaped disks of any of these being small enough to enter the ureter, access to which was to be had through the urethra, while the suprapubic opening was mainly to be used for inspection with artificial illumination and for sponging during curettage with a final galvanic cauterization. The bladder was wholly closed and a soft catheter retained in the urethra. During and at the close of this operation I was disappointed and believed that the conditions had not been adequately dealt with, and this because the natural mobility of the bladder mucosa and muscles was such that the curette was given no counter purchase. Still, the early result was encouraging and the later outcome was convincingly so, in that now more than two years have elapsed and no vesical symptoms whatever exist, the urine being retained for seven and eight hours.

While our views differ as to what constitutes a feasible limitation, I am wholly in accord with the assayer regarding the advantages attending a removal of as much of a generally tuberculous ureter as is feasible, but as to the necessity of making this complete operation in all cases of renal tuberculosis I cannot agree with him. I think we may recognize a good instance for such objection in the admirable specimen of early diagnosis and nephrectomy for tuberculosis shown by Dr. Vineberg to-night. In a case such as this, where but a part of one pyramid has a small necrotic lesion, no good reason seems to hold for removing the ureter, although the small lesion noted at its vesical extremity by Dr. Vineberg may or may not call for some later attention.

My only nephroureterectomy was a "makeshift" operation, and done in two stages on a young man with bilateral renal tuberculosis, in whose case any operative interference seemed ill-advised. After some months of observation his suffering became

so acute and his demand for anything, if only palliative, so urgent, that I consented to sever the thickened and painful right ureter at the bladder and give it a lumbar transplantation with the hope that diverting much necrotic debris from the bladder would afford some relief. The ureter was reached extraperitoneally through a semilunar line incision extended into the internal ring. Although this operation met the particular indication in relieving vesical and ureteral pain, the patient's general condition became so much more threatening that in less than two months it was evident death was imminent if the kidney and ureter were not removed. Much doubt was felt even as to his surviving an operation. Convalescence was slow at first, but surprisingly good before he had left the hospital. For nearly two years he lived on an uncle's farm, and with fairly good health, was able to work. He insisted then on going back to live with his father on a canal boat. In a short time the remaining kidney rapidly retrograded; the bladder irritability was again the source of exhausting pain and incontinence, removed to the hospital he died after two months in Bellevue. The result of nephrectomy here was a good instance of the propriety in some cases of such an operation, even when the other kidney is known to be somewhat involved, but still functioning adequately.

Dr. GEORGE E. BREWER.—I have been very much gratified to have heard this paper of Dr. Reynolds' and I thoroughly believe that there are cases in which the operation described by him is the rational one to perform. I do not think, though, that those who see many cases of surgical tuberculosis agree entirely with the statement regarding operative interference in limited cases. The ideal case for operation is the one presented by Dr. Vineberg tonight. If a diagnosis of tuberculosis has been made, with abscess of the kidney or with a tuberculous foci in the kidney, which ruptures into the pelvis, before extensive infiltration has occurred through the pelvis or ureter, then I believe a primary nephrectomy done at the earliest period would be the best for the patient. In these cases if we can make an early diagnosis a simple nephrectomy I believe to be the operation of choice. We seldom find tuberculosis of the intermediate portion of the ureter; when tuberculosis of the kidney occurs it is frequently the intervesical portion of the ureter that becomes next involved. If catheterization is done and we find an obstruction, we may cut down upon the kidney and explore the ureter for over one-half its length and remove it, but we will find that the intermediate portion of the ureter is comparatively healthy. In no operation can we remove this intermediate portion of the ureter; therefore, we must usually leave behind some portion which is tuberculous when we attempt to remove the kidney and ureter. In Dr. Reynolds' operation there is left a stump or some other portion which is the seat of the tuberculosis. Another point I wish to make is that tuberculosis is a disease in which, if the resistance of the individual is sufficient, the disease can be overcome. Take, for instance, a kidney,

testicle, a joint, or other organ the seat of tuberculosis, if we can get at the disease at an early period, and remove the primary focus, I believe in many cases the disease will yield. In tuberculosis knee-joints we frequently have foci in the epiphysis; if we remove the primary focus, although there are other deposits in other portions of the joint, and remove this primary focus by a quick operation, nature will often do the rest. This now is equally true of tuberculosis of the genito-urinary passages. If the kidney is the seat of a primary focus of tuberculosis, cut it out without too much damage to the parts and without too much lowering of the vitality, and then leave the rest to nature. This is a point that has been raised many times, and even such an authority as Dr. Willy Meyer, of this city, has entered a plea for the making of earlier diagnoses before the Surgical Society, and he stated that in the great majority of the cases if one took out the primary focus from the kidney the lower end of the ureter would give no trouble. This principle applies to all cases of tuberculosis of a surgical nature. I, too, believe that in the majority of the cases where the primary tuberculosis in the kidney is present and diagnosed early that it is wiser in such cases to do a quick operation, a quick nephrectomy. But do not damage the parts too much and do not attempt to do too much. In those cases which have a much thickened ureter, and where a complete operation is possible, it should not be done with the idea of completely removing all the disease.

I was surprised to hear the doctor state that we could so readily reach the power part of the ureter through the incision mentioned by him. During the past year I have had occasion to follow down the ureter in four instances, and I made the incision beginning one or two inches above the pubis and extended it along Poupart's ligament to the anterior superior spine of the ilium, dissecting away the tissues as one does in exposing the common iliac artery. Through that incision I found it extremely difficult to follow down the ureter. Only last week I had occasion to do this; in making an exploratory operation I found calculus disease situated low down; from the pelvic brim I could pass a probe down five inches before it entered the bladder; this showed that from the pelvic brim to the entrance into the bladder was certainly five inches. Now, if we go above that it seems to me that it is a long distance to go to reach the vesical end. But drawing up on the bladder might be of advantage.

It should be remembered that in all cases nearly we have to do with a blood infection. Tuberculous deposits reached the kidney through the blood in the majority of cases, and it is a unilateral infection. Of course, that is not a primary tuberculosis; there must be a focus somewhere else, and, in the vast majority of cases, the infection originates from diseased bronchial glands. That is really the source of infection which may affect the kidney, testicle, prostate, joints, or other parts of the body.

In all these cases I think it is very important to determine the

patency of the other kidney. We should learn, too, the freezing point of blood serum. In addition to the other precautions, we should make an examination with the cystoscope and make an urinary analysis of the excretion from each kidney. I believe that cystoscopy is one of the most valuable and reliable means we have to-day in making precise diagnoses.

Dr. H. N. VINEBERG.—I wish to express the great pleasure that I have had in listening to Dr. Reynold's paper, and how much I have profited thereby. First, regarding early operation, I think that Dr. Reynolds will agree that in the case of the specimen I presented to-night, nothing would have been gained by sending such a patient to the country to recuperate. As a matter of fact, she had been to the country, but returned with evidently a disease of the kidney more advanced than when she went away. I am very glad Dr. Reynolds is alone in the position he assumes that the bladder complication should be cured first before attempting to remove the kidney; I think such a course would not be good for the patients, and would be impracticable in the majority of the cases. I remember one case that I operated upon two years ago; this patient had been treated for cystitis in three different prominent hospitals, and had been in Mt. Sinai Hospital five or six weeks just before coming under my care, receiving bladder irrigations three times a day. The true condition was not recognized; a diagnosis of intractible cystitis was made. She was on the verge of committing suicide. She had to go to bed with a pus basin near her and there was no improvement in her condition as the result of treatment of the bladder in the different institutions. She came into my office as a charity patient, being sent there by a friend. On an investigation I found she had tuberculosis of the kidney; the affected (right) kidney was removed, and it was found to be completely disorganized. In the course of a short time the bladder symptoms improved without any direct treatment, and she was able to retain her urine four and five hours at a time, even while in this hospital, and gained 25 pounds in weight during the first year. She was able to follow her usual avocation and without bladder symptoms. Israel and others who have been doing this sort of work never think of attending to the bladder first; the bladder may at times require treatment afterwards.

Dr. Brewer stole my thunder when he spoke of the uselessness of removing diseased ureters in such cases as the one presented by me. In these early cases it is only the intravesical portion of the ureter that is involved, and it is impossible to remove this by operation. There really is no object in attempting to remove the ureter which is normal in such cases, excepting the intravesical portion, but we must depend upon Nature to complete the cure. In the first case reported by me about eight years ago stricture of the ureter gave rise to the first symptoms of the tuberculous condition. This also was a case of very early tuberculosis. I removed the kidney and the patient has been in perfect health ever since. However, where the ureter is diseased and much thickened an

attempt, I believe, should be made to remove that ureter at one and the same sitting. Dr. Kümmell has recently reported a series of seven cases occurring in women in whom he has been able to make a diagnosis of renal tuberculosis without even bladder symptoms or symptoms referable to the kidney. The patients suffered mostly from general malaise, and passed turbid urine, which on examination showed the presence of tubercle bacilli in some cases, but not in others. Kümmell makes the point in his paper, which we as gynecologists should take well to heart, that when a woman suffers from obscure ill-health, and the urine is turbid, frequent examinations should be made for tubercle bacilli, either by examining large quantities of the urine, say, all that has been voided in 48 hours, or specimens taken direct from the kidneys by ureteral catheterization. Kümmell dwells particularly upon the advisability of removing a tubercular kidney as soon as the diagnosis is established, not waiting until the ureter and bladder become secondarily affected, and perhaps the other kidney. It seems to me this is an attitude that ought to appeal to every one. It was surprising how, in some cases with absolutely no symptoms, the kidney was found completely disorganized by the tubercular process.

Regarding the feasibility of removing the kidney when there are other tuberculous foci present, every such case must be judged by itself. In only one of my cases—it is now two years since operation—was there a suspicion of lung trouble at the time of operation; there was some slight dullness at the apices, etc. This patient, after an elapse of two years, has not developed any additional symptom of lung affection.

As to the limitation of the disease to one kidney, that occurs more frequently than is supposed, and this occurs more frequently in women than in men. In Israel's 22 cases in women, in only two were both kidneys involved. In all of my six cases the disease was limited to the one kidney. Tuberculosis of the kidney is more frequent in women than in men, the proportion being 2 to 1. The more modern researches show that tuberculosis of the urinary tract is a descending infection, and never an ascending one, even in men. It is a blood infection. When the bladder is infected it is always secondary to tuberculosis of the kidney; it is impossible to have a tuberculous infection go from the bladder to the kidney. Tubercle bacilli cannot go against the stream. Israel, Kümmell, and others have removed diseased kidneys when there has been tuberculosis of the opposite kidney, and the results have often been very good.

DR. EDWARD REYNOLDS.—I have been especially interested in the remarks of Drs. Brown, Brewer and Vineberg about the recovery of cases and the disappearance of symptoms when the tubercular ureter has been left in situ in nephrectomies, because I originally held their position myself. It is, in fact, quite surprising how well on the whole patients do when tuberculous ureters are left in situ, but as my number of cases increased and I was led to do more

ureterectomies I found experimentally two facts which confronted me. First, while the other cases did well, complete cases did better; theoretically the less trauma, the less the probability of infection; but practically I think we come to the old surgical precept that a complete operation is generally better borne than an incomplete one. My own cases have done better, having better convalescences, healing more quickly, and becoming free from symptoms quicker after the complete operations than after simple nephrectomies. Nephro-ureterectomy looks a formidable operation when one begins, but with each succeeding operation it becomes simpler. In cases where the ureter is extensively diseased it is highly important that all that can possibly be gotten at should be removed. In cases where the affection is not extensive the removal of the whole ureter is exceedingly simple and does not appear to complicate the other operation.

While all surgeons of experience will agree that general principles must occasionally be changed to suit special cases, still I confess that for myself I should lay down the general rule that in tubercular disease the whole ureter should usually be removed.

With regard to the point raised by Dr. Brewer of the difficulty of reaching the junction of the ureter with the bladder through the incision described, I will say that the lower edge of the incision by traction upon it downwards can be carried well to the anterior brim of the pelvis; you can pull the incision down against Poupart's ligament. The posterior wall of the pelvis is a long one; the anterior wall is a short one. If Dr. Brewer will think of this he will see that with the finger against Poupart's ligament the tip of the finger can go down to the junction of ureter and bladder; you can reach it readily; the finger does not follow the course of the ureter but cuts across.

I must say that I find myself in disaccord with Dr. Vineberg's statement that as soon as you find renal tuberculosis you must always get at it with the knife. One should remember that tuberculosis in any part of the body is a disease that is susceptible of improvement under the open-air treatment. There is a large number of men to-day who believe that renal tuberculosis should be given constitutional treatment only. Dr. Trudeau has treated many cases of renal tuberculosis by open air with great success, and many men have claimed to have obtained radical cures. Some cases of general tuberculosis go down too quickly to permit any operative interference. They are necessarily fatal cases. In those cases which take a slow and prolonged course I believe we have plenty of time to build the patients up and get them in good condition before resorting to the knife. I think it is more judicious to go slowly and carefully and take advantage of every opportunity to build our patients up before operating unless they are already in excellent condition and the disease plainly of localized type. In such a case as that which Dr. Vineberg reported, I should operate at once. In charity cases, or those without means of taking

advantage of what is best for them, I would not waste time in any preliminary treatment.

Dr. Brewer remarked that the inter-vesical portion of the ureter was inaccessible and, therefore, difficult of removal. That is true, but you should bear in mind that the more of the foci you cut out without surgical shock the better it would be for the patient. I do not think that taking out the ureter adds to the surgical shock.

TRANSACTIONS OF THE WOMAN'S HOSPITAL SOCIETY.

Meeting of Nov. 22, 1904.

DR. CARMALT *in the Chair.*

X-RAY PICTURES OF RENAL CALCULI.

DR. LEROY BROWN.—I have here two body radiographs of a man weighing one hundred and sixty or seventy pounds. It is well known how difficult it is to obtain such a photograph of one of that weight.

The patient brought to me specimens of soft, phosphatic urinary calculi that he passed. For the last six or seven years he had had every year one or two attacks of renal colic, in which the pain was always on the left side. Within a day or two after these attacks he had passed calculi about the size of the head of a black pin or a little larger, of irregular shapes. I told him it was possible there were calculi in the bladder, but I had good reason to believe there were also calculi in his kidneys, and that I wished an X-ray taken both of the pelvis, including the bladder, and of the kidneys. The picture does not show the bladder well, so the absence or presence of calculi in the bladder is not proven. The sound also failed to demonstrate the presence of stone in the bladder.

The first picture shows the shadows of about eight or nine stones in the right kidney. The interesting fact is brought out that all the pain in each attack was on the left side, while the shadow photograph shows all the stones to be in the right kidney. Doubting that the pain could be in the left side and the calculi in the right kidney, I suggested to Dr. Tousey, who made the photographs, the possibility of an error. He recognized the possibility and had the patient return for a second exposure, this time designating the side by a coin. The picture came out as before with stones in the right kidney, but the pain complained of was on the left side. I could get no pain on deep pressure on the right side.

These shadow pictures impress the importance of X-ray exam-

inations before operations in like conditions, as one may readily make a mistake and explore the wrong kidney.

My history of the patient ends here; he went home to make preparations for operation, but has not reappeared.

RADIO-ACTIVE SOLUTIONS.

DR. KEMP.—About nine months ago, Dr. Tousey prepared some normal saline solutions which, we found, would take up radio-active constituents very rapidly. He left the radium tube in the solution 36 to 48 hours. I then injected a number of ounces into rabbits, dogs and cats to test the physiological effect. I watched them for several hours afterward, but observed no result. One rabbit suffered from diuresis from the salt solution. I tried infusing with radioactive solutions. I first infused a dog in the regular fashion with normal salt solution. Did not use high temperature of fluid in order to raise pulse tension. I employed Dawbarn's method; used it at 120° , and got marked increase of pulse tension. 105° was the temperature of the blood; noted results, then injected Tousey's radio-active salt solution into the femoral vein of the dog with absolutely the same effect; in fact, the pulse tension ran practically parallel with that when the ordinary solution was used. The dog had no symptoms at all—the increased pulse tension was the same as with normal salt solution.

That settled to my mind fairly conclusively the question of radioactive solutions. If you expect to secure results, you expect to have physiological symptoms resulting from the solutions you employ. If there are no symptoms, you bank on the fact that the solution has no value. Experiments were carried out in a number of cases.

DR. GRAD.—Although radioactive solutions do not produce constitutional symptoms, they may have local effects.

DR. KEMP.—The interesting part of these radioactive injections is that there is no irritation and no local effect from the injections; conditions remain normal.

DR. BROWN.—At the last meeting of the Obstetrical Society, one of the readers of the evening advocated the use of Ringer's fluid in infusions, reviving the claim that this fluid has a more stimulating effect on the heart than the decinormal salt solution we are in the habit of using. Having occasion to write to Dr. Crile of Cleveland, who has probably made more experiments on dogs in using infusions, etc., than almost anybody else in this country, I asked his experience in the use of this fluid. I received a letter from him to-day in which he said he had not found any especial advantage in the Ringer solution over the normal salt solution. I state this to-night, because, since the Ringer solution is rather difficult to prepare—containing dextrose, calcium chloride, salt solution and some other things—it is a

relief to feel that we can stick to the salt solution and get as good results as with the Ringer solution.

DR. CARMALT.—What is Dr. Crile's salt solution?

DR. BROUN.—The regular decinormal strength.

DR. CARMALT.—The statement of Dr. Ewing as made at the meeting of the Obstetrical Society was that as Beebe used it, it contained dextrose. That makes a technical difference—the one without dextrose is easily sterilized, the other is difficult to sterilize.

DR. KEMP.—It is practically impossible to sterilize any of the dextrose preparations.

DR. CARMALT.—Rogers quoted several experiments with solutions with dextrose which were found actively stimulating to the heart as contrasted with ordinary solution.

UTERINE FIBROIDS.

DR. BISSELL.—The specimen I present is one of multiple fibroids of the uterus and is of interest because it illustrates the danger of always considering such tumors innocent when the symptoms are not of a disturbing character. The patient presented herself for an examination because of a leucorrhea of two weeks' duration. On examination a large fibroid uterus was found. Local treatment was followed by the relief of this single symptom. The patient was 43 years old, the mother of three children, menstrual history normal. When the patient was informed of the existence of a tumor she desired its removal immediately, and in view of the fact that we now consider it as established that fibroids may at any time undergo degenerative changes, I encouraged operation. As will be seen, the entire body of the uterus was so involved that myomectomy was impossible, even if it had been desirable. The body of the uterus was therefore removed and the cervix and appendages left. Recovery uneventful. When the tumor mass was cut open for the purpose of making a gross examination of the specimen, a fibroid the size of an egg was found undergoing a certain morbid change, apparently of a necrotic character; another fibroid larger in size and situated at quite a distance from the first, presented also certain structural changes. The pathologist's report is that "the small tumor shows masses of muscle cells and far less fibrous tissue than the larger tumor. . . . There are some areas where the tissue appears to be undergoing necrosis, but there is no true inflammatory infiltration."

DR. BROUN.—I agree with Dr. Bissell that every fibroid tumor ought to be removed. His case brought to mind a patient under my charge now, who is a picture of health. She says she has not a pain or ache, but she has a large fibroid.

DR. CARMALT.—I have under observation four patients of Dr. Thomas' with fibroids, seen by him twenty years ago.

DR. BROUN read the paper of the evening entitled—

SOME CONCLUSIONS AFTER OPERATING FOR TWO YEARS ON THE
PELVIC DISEASES OF INSANE WOMEN.

(See *Original Article*, page 208.)

DR. KEMP.—I have followed with a great deal of interest Dr. Broun's work at the State Hospital not simply in regard to his special line of work, but also in regard to certain investigations we have been carrying on in regard to epilepsy. In the first place disturbances of the uterus and ovaries are a very well-known factor in causing neuroses among patients in apparently normal health, and so much more so must they be factors in patients sent to our Institution, patients who are poorly fed and nourished, and who, frequently, at the time of puberty, have had mental disturbances, and, in addition, adhesions of the tubes, or anteversion or other uterine trouble. This class of cases includes two sets: first, those psychoses the result of auto-infection, as in cases of chronic appendicitis where there is purulent exudate. A bad mental condition is apt to be initiated by reason of the auto-infection, and relief is undoubtedly secured by removing the original condition. The second class of cases might be directly or partially reflex in nature. Retroversions, adhesions, lacerations of the pelvic floor, have a marked effect on a normally constituted woman. How much more would a similar condition affect one subject to mental depression. The etiological factors of epilepsy are various; for example, certain cases result from tumors of the nose, and these conditions are relieved by removal of the nasal fibroids. Others are directly reflex, such as those on which Dr. Broun operates, where dilatation of the cervix proves of service. Others can be referred to the gastro-intestinal tract. It is the purpose of our researches that every case of epilepsy shall have an examination. Every case of nervous disease is examined and then passed on to specialists who correct the lesions in their particular domains. These patients are placed in the most perfect physical state possible, and the effect on the epilepsy, melancholia, or other mental condition is noted.

Epilepsy or the epileptiform convulsions may be of reflex origin or result from auto-infection or reflexly from foreign bodies, worms, etc., in the intestines.

Another class of cases includes acute convulsions of children from overeating, practically acute dilatation of the stomach. If the child vomits the convulsions cease. There are cases in which fermentation of food causes gas in the intestinal tract; cleansing of the bowels remedies the trouble.

Holt cites cases of chronic dilatation of the stomach producing auto-infection that is productive of convulsions and of epilepsy. In our work in the Institution we are trying to remedy gastro-intestinal conditions. I am trying to have the Trustees allow us to turn the gastro-intestinal cases over to the gynecologists. In a series of 40 or 50 epileptics I found only two stomachs in

normal condition. Fifty per cent. showed dilatation; the same number had chronic gastritis. With medical treatment the auto-infection will persist, and the patient remain nervous; sometimes, however, we have had a reduction of fits. Gastroenterostomy as carried out in Rochester has proved effective. I believe ultimately, we can secure much better results in many of those cases by turning them over to the surgical division.

DR. GOFFE.—Within the last few weeks I have had a great light on this subject. I previously had been wandering in the realms of darkness in which evidently the gentleman who preceded me is wandering at the present time, but in a recent discussion before the Academy of Medicine on the effects of hysterectomy upon the nervous system of women, I was enlightened by one of the most prominent specialists on nervous diseases in the city to this effect:—"Nothing that you men can do is going to affect in any way the mental condition of women, and you need not disturb yourselves at all about producing neurasthenia. Nothing you can do will produce either one. Nothing we know causes psychosis or neurasthenia; all we know is that certain people in this world are built in a very healthy condition, others with a rather unstable equilibrium, and certain things may happen that will upset that equilibrium, then some will have psychoses, others will have the equilibrium of the nervous system upset and they have neurasthenia." I felt relieved. All minute discussions about the influence of the digestive system upon the mental faculties, especially in producing epilepsy, or the reflex effects of pathological conditions of the genital organs upon the mental state, are interesting, but really have no tangible existence. I was left hung in the air when that discussion was finished. It seems that is the attitude all specialists in nervous diseases have taken; that it is an inherited, original, primary condition in people of unstable equilibriums that causes psychosis or neurosis; no other cause is known.

I do not believe that anything that surgery does can be regarded as a cure of epilepsy. We know that a certain prominent eye specialist has been given a free hand to experiment to any extent with epilepsy at Sayonara. The eye muscles have been cut, glasses fitted, everything done that it is possible to do, to set eyes in correct form, and the opinion of those in authority there, who have observed the treatment from a scientific standpoint is that it is absolutely futile. It is said, worms in children will cause epilepsy. Because a child has a convulsion and we find worms, there is no reason to conclude the child has epilepsy. It may have a convulsion, and worms may cause it, but it is too serio-comic to say we are curing epilepsy by relieving children of worms.

I believe it is proper that we should place these people who have lost their equilibriums in as perfect physical condition as possible in all the different parts of their animal economy, and I believe Dr. Broun and other specialists are doing good work

in this line, but I think it might be well to sound a warning note to any great claims as to curing epilepsy or any psychosis that is known, in that way.

DR. GILDAY.—I would like to speak of epilepsy from a surgical standpoint. I think that medical men have stated that under certain conditions of shock to the nervous system, epileptiform conditions are stopped for a time, and that it has been shown that an attack of pneumonia or typhoid fever will put off epileptiform conditions. In the last two or three years I have trephined in four cases for epilepsy, the epileptiform seizures having occurred in every case from once or twice a day, to two or three times a week before the operation. In every case where I operated these conditions ceased for two or three months. After that the condition persisted as it did before.

DR. TAYLOR.—I recall a very severe case of post-partum infection. She was in almost a condition of acute melancholia. As soon as a drain was put in and infection ceased, she improved rapidly, mentally.

DR. PINKHAM.—I have had three cases of epilepsy in gynecological patients under my charge during the last year and a half. The first was a woman 37 years old, who came to the clinic, saying that she was an epileptic. Her father had been so all his life, and she had had so-called fits twice a week, sometimes only once in three weeks. I did not find any scalp scars from the frequent falls, etc., in this case. She told me that she had warnings and knew when the fits were coming on; and she would then lie down. Naturally she was more or less neurasthenic. It was found that she had a lacerated cervix and some misplacement of the uterus. She was treated locally and hygienically, and has had no fits since she first came to the clinic about five months ago. The word "epilepsy" as used, especially by patients, is very misleading. A patient says he has epilepsy, if he has fits, vertigo or dizziness, or if he loses consciousness for some reason. A case of true epilepsy was operated on for pelvic trouble at the New York Hospital and then went to the Bloomingdale Convalescent Home; no improvement was shown except for a very little while just afterward.

The other case of epilepsy was like the first. I did not think it was true epilepsy or even petit mal. I think it was a case of "fits." She had been treated in the medical departments of various clinics, two of them diagnosed it as a case of epilepsy, and one was treating her for it. She was improved after we looked after her gynecological trouble.

DR. GRAD.—I do not wish to discuss Dr. Broun's paper, but to speak of a case of puerperal insanity. This patient was perfectly healthy, pregnant with the third child. When I reached her the baby was born, and I found a very small tear in the fourchette, which I did not think it necessary to sew. Forty-eight hours later they telephoned that the woman had had a chill. Her temperature was 105, and she developed a mild septic con-

dition, which I suppose came from the little tear in her fourchette, which looked quite gangrenous, in spite of thorough local applications of antiseptics. On the third day of the septic process she thought a mouse was on the wall, became very violent, and talked a great deal. The maniacal condition lasted for three weeks, although the septic condition apparently had subsided after six days, as within that time her temperature and pulse became normal. It is three years since, and she has been well mentally and physically. This shows that even mild septic processes under some conditions may become the cause of considerable mental disturbance. I had known her for a number of years, and had confined her with a previous child, and saw her many times after that, with never any suspicion of any mental disturbance.

DR. CARMALT.—We must clearly distinguish psychological conditions following starvation previous to operation of which I have seen two cases. Dr. Herter has made some rather clear studies of the mental effects of starvation on patients. If a patient is exhausted, thin, of neurotic temperament, it behooves us to be careful as to manner of feeding before grave operative procedures on the abdomen. I can cite two cases in which the time of menstruation brought about psychic explosions, two cases of Dr. Thomas's, in the better walk of life. One had been unable to live in any house because of the noise she made at these periods. She would allow nobody in her neighborhood. Finally, both ovaries and tubes were removed. She went into an anemic coma for five days, but recovered. She has remained perfectly well since operation. The other woman's experience was somewhat similar. She would be accepted in no hotel. She was said to have epilepsy; I think the diagnosis was far-fetched, but she had psychosis of marked type, in which she was very destructive and would injure people about her. Complete hysterectomy was done, with removal of tubes and ovaries, which were perfectly normal, and the result has been an entire and complete cure. She has since married, and remained perfectly well. This cure has lasted since 1895. As to trephining, I have had much the same experience as Dr. Gilday. The patients were much worse after than before operation.

DR. BROWN.—In the short paper of to-night I tried to bring out plainly the fact that these patients being insane are as much entitled to physical relief as those who are not insane. During the entire number of operations done, there has been no increase in insanity, or excitement resulting from operations. No harm has been done, and unquestionably there has been relief from the well marked train of nervous symptoms which we recognize as following certain pathological pelvic conditions. I do not think for one moment that any surgical operation for pelvic disease would cure a woman of insanity except possibly in some types of melancholia, but by examining the histories of those operated on, I was impressed by the fact that the relief of certain physical

conditions from which nervous symptoms would follow, did benefit patients physically and they were benefited mentally in conjunction with the other treatment that they received at the institution. If we should follow out the inference drawn by one of the speakers to-night from the remarks of an alienist at a late meeting of the Academy of Medicine, that nothing we can do can benefit such patients, and nothing we can do can cause insanity, there would be no occasion to have asylums and care in treatment; we could only lock them up and let them die. These conclusions are, however, not in accordance with facts. Treatment in asylums shows that a fair percentage of patients admitted with acute delirious or melancholic insanity are greatly improved. They are never discharged from the hospital as absolutely cured, for if they return to the same surroundings of mental strain and stress there will very likely be a return of their weakened mentality. As a proof of the statement that surroundings of mental strain cause the breaking down of the mentality of some of the weaker minded, statistics show that during slavery before the War of 1860, in Georgia the number of insane among the negroes was 44; one in 10,584; in 1870, 129; in 1890, 500. We recognize that certain people are born healthy and strong, and are not overbalanced under trying circumstances; other patients are apparently in the same condition, yet for no reason we can see, are overbalanced and lose their mental equilibrium. If that patient, losing that mental equilibrium is placed in the most favorable surroundings, and if there is any physical condition which would cause her to be a partial nervous wreck, the relief of that condition cannot help benefiting her mentally.

It has been stated by Dr. Manton that it is the custom in the asylums with which he is connected, to relieve the patients when possible from all pathological conditions before discharging them. This is done on the basis of removing every possible chance of a recurrence within the reach of the authorities, by placing the patients in as good physical condition as possible before sending them back to their former surroundings.

TRANSACTIONS OF THE SOUTHERN SURGICAL AND GYNECOLOGICAL ASSOCIATION

Proceedings of the Seventeenth Annual Meeting, Held at Birmingham, Alabama, December 13, 14 and 15, 1904.

The Association met in the Council Chamber of the City Hall, and, in the absence of the President, Dr. Floyd W. McRae, of Atlanta, Georgia, the Second Vice-President, Dr. J. Shelton Horsley, of Richmond, Virginia, presided.

Addresses of welcome were delivered by Mayor Drennan and Dr. L. G. Woodson, which were responded to by Dr. W. P. Nicolson of Atlanta, Georgia.

After a brief report from Dr. John D. S. Davis, chairman of the local committee of arrangements, relative to entertainments, order of procedure, etc., the reading of papers was proceeded with.

A METHOD OF UNITING INTESTINES OF VERY SMALL OR OF UNEQUAL CALIBER.

DR. J. SHELTON HORSLEY, of Richmond, Virginia, said that there were many modifications of sutures, but all of them might be divided into two general classes, the continuous and the interrupted. Taking it for granted that each suture penetrated all coats of the intestines, he demonstrated experimentally that the continuous suture more nearly fulfilled the ideal conditions for intestinal healing than the interrupted suture. Serous surfaces united after being sutured on account of the hyperemia of repair, and this was dependent upon some slight injury to the peritoneum. In the case of an interrupted suture, union was obtained within the bite of the suture by hyperemia caused by pressure of the suture, by the trauma of the needle, and by the presence of the thread. Between the sutures the pressure from thin intestinal tissues was practically *nil*, so union depended solely upon extension of this hyperemia, and if this process did not extend from one stitch to another leakage would surely occur. If continuous and moderate pressure was made on two serous surfaces, sufficient injury would be done those surfaces to cause adhesions. This continuous pressure along the entire margin of an intestinal

wound could be obtained only by the continuous suture, and not by the interrupted. He described nine experiments in which an area of intestine was included between two lines of sutures. In only four of these did the whole area between the rows of sutures unite, demonstrating that something besides mere approximation of serous surfaces was necessary for satisfactory union. The method of suture was difficult to describe without accompanying illustrations. The intestinal ends to be united were placed side by side with their convex borders in contact and clamped with a hemostatic forceps. Then he used a suture that passed through the whole of the intestinal wall, sewing together with a continuous stitch a crescentic area excised; then changing the stitch to a Cushing right-angled continuous suture penetrating all the coats and invaginating the remaining margins of the wound. When the first knot was reached in the suture, it was invaginated and the suture continued by two or more insertions of the needle; with the last two insertions of the needle, as secure a hold as possible was obtained without penetrating the mucosa. The very last insertion of the needle was in the reverse direction of the other insertions, so that when the knot was tied it was partly buried. The bowel was then returned to its natural position, and the mesentery sewed up with continuous stitches.

A number of photographs and specimens from dogs were exhibited, demonstrating some of the advantages claimed for this method. These specimens had been filled with paraffin and then photographed; afterwards the intestine was removed, and the paraffin model was also photographed, giving a very good idea of the large lumen at the site of the union.

DR. W. P. CARR, of Washington, D. C., stated that the holding of the bowel with a clamp, a rubber ligature, tape, or something of that sort, to prevent the escape of intestinal contents during operation was the only part of intestinal suture that seemed not to be as perfect as it might be.

There was more or less danger of injuring the bowel by any sort of clamp or ligature which was put around it tight enough to prevent the intestinal contents from escaping. The Murphy button or any form of clamp might possibly do that at times, particularly if the bowel was already more or less inflamed at the time of the operation. He thought it was better to hold the bowel with the fingers of an assistant when this was possible, although it facilitated the operation very much to take the bowel in a long clamp not far from the point where it was going to be sutured, as it prevented the sliding of the coats of the bowel over each other.

DR. HERMAN J. BOLDT, of New York City, personally preferred suturing to using buttons or mechanical devices for the purpose of intestinal anastomosis.

DR. J. M. T. FINNEY, of Baltimore, Md., said that in his experience he found that there were certain technical difficulties to

the end to end suture which were hard to overcome. For instance, at the mesenteric border it was difficult to obtain satisfactory union; there was so much likelihood that a leak would occur there, that it had been his practice for the last two years to use almost exclusively lateral anastomosis, closing both ends. This gave more satisfactory union. He was an advocate of the interrupted suture.

DR. A. PALMER DUDLEY, of New York City, stated that in his experience the use of the continuous as against the interrupted suture had been followed by fairly good results in intestinal work.

DR. W. S. GOLDSMITH, of Atlanta, stated that in placing continuous sutures around the bowel, where there was likely to be distention, leakage might result, and a fistula be produced by tissue necrosis incident to the distention of the bowel on account of the application of this ligature. It was a ligature in effect around the bowel; we had distention of the gut, and the ligature did not expand; there was no elasticity about it. Therefore, the interrupted suture would be his preference, although not so rapid, minimizing the pressure owing to distention or dilatation of the gut.

DR. SAMUEL J. MIXTER, of Boston, said that where one was in a hurry the continuous suture was quicker. He emphasized the absolute necessity of everybody practicing these operations on lower animals before beginning to do them on patients. This was a point that was not sufficiently recognized. Every new method should be tried on some of the lower animals. So far as his experience went, very little clamping was necessary even if there was some leakage. He did not consider that there was any great danger from septic peritonitis following, because the peritoneum was able to stand a great deal of soiling without great damage, and it could be washed off without producing any ill effect. This was likewise true of operations on the stomach.

DR. DYER F. TALLEY, of Birmingham, Alabama, said that the subject of

INTESTINAL OBSTRUCTION

was one which could not be too frequently presented to the profession, and one with which it could never become too familiar. It was a condition which presented many difficulties in its early diagnosis, and it was a well-recognized fact that in acute cases the life of the patient depended on early recognition and prompt surgical intervention.

There were two difficulties in the way of early operation: (1) It was hard to make a positive diagnosis in the first twenty-four hours; indeed, in some cases it was impossible to do so unless an exploratory laparotomy was made. (2) There was a tendency on the part of the patient, his friends, and also the physician, to

wait until to-morrow and see what purgatives and enemata would accomplish.

The author reported eight cases of intestinal obstruction that had come under his care during the last fifteen months. The details of each case were recounted with singular clearness. One case showed that a laparotomy could be done without anesthesia, and many cases that were seen late and were too weak for an anesthetic might be operated on and relieved without a general anesthetic. The results of operations in the eight cases were five recoveries and three deaths.

DR. GUY LEROY HUNNER, of Baltimore, stated that from a large experience with hospital and private patients showing symptoms of intestinal obstruction, he had come to the conclusion that he would rather err on the side of operating occasionally unnecessarily than to commit the error of not interfering and be too late. Cases were cited in point.

DR. W. P. CARR said the more he saw of cases of intestinal obstruction, the more he was convinced that whenever there was a strong suspicion of it an exploratory operation should be made. There were so many cases that had little or no symptoms for quite a while, and others that had considerable fecal movements from the lower bowel after obstruction had taken place, that one was apt to be misled. He had been misled a number of times. He narrated some interesting cases.

DR. J. GARLAND SHERRILL, of Louisville, advocated early operation in these cases. Whenever a patient had intra-abdominal pain which was not promptly relieved, an exploration should be made. Whenever a patient had a severe pain in the abdomen that ceased suddenly, it was likely to be the result of gangrene of the gut, and for that reason such a case should demand very prompt operation. Many of these patients could be saved by opening the abdomen at once, even in the presence of shock, and in that way avoid inflammation of the peritoneum.

DR. CHAS. L. BONIFIELD, of Cincinnati, recommended changing to ether when patients could not stand chloroform, particularly in children.

DR. W. O. ROBERTS, of Louisville, narrated the case of a child, nine months old, on which he had operated. The little patient had been treated for dysentery. When he saw the patient there was a considerable amount of distention, great straining and bloody mucus passed by the bowel. He introduced his finger into the rectum and found an intussusception. The intussusception was within two inches of the anus. He advised laparotomy, which was consented to and performed, and found the intussusception began at the ileo-cecal opening and went clear to within two inches of the anus. It was relieved very easily, but the child died in the course of twelve hours from shock. It was very important in all cases of intestinal obstruction to examine the rectum carefully.

DR. WM. E. PARKER, of Hot Springs, Ark., said the general

practitioner ought to be impressed with the importance of early diagnosis in these cases, and if there was any question at all to call in a general surgeon, or some one who had had experience in this class of cases. He knew of no class of work in which an early diagnosis was as important, and then, after this, of getting into and out of the belly as quickly as was consistent with good work.

DR. W. P. NICOLSON, of Atlanta, called attention to the significance of abdominal pain. We should always bear in mind that the location of pain in the abdomen bore practically no relation to the location of the lesion itself in many instances. When a patient, with a severe abdominal pain, was not relieved by two or three doses of morphia, and did not remain relieved by this agent, but needed a repetition of it, the case was not one of indigestion. It was far more serious. He had the misfortune to operate on a young woman for intestinal obstruction, and during the operation there was tremendous fecal vomiting, which was aspirated into the lungs, some of it. She left the table in good condition, with good pulse, and with indications that she was all right; but within a short time she became cyanosed, with rapid breathing, pulse increased in rapidity, she remained conscious, but died within two hours.

DR. SAMUEL J. MIXTER said he thought many patients who had had intestinal obstruction for days, and were in a very critical condition, could be saved if too much was not attempted, and the reason so many of these patients died was because surgeons attempted too much. Take a case of gangrene following intussusception; if a simple opening was made in the most distended loop of bowel, a tube tied in and the intestine drained, a later operation could be done, and the patient probably saved, whereas if one attempted to do a resection or a serious operation at the time, the patient would surely die.

DR. A. PALMER DUDLEY said that the surgeon was at a great disadvantage when he was called in to see a patient to whom morphine had been administered for the relief of pain, for the reason that it masked the symptoms. Peristalsis was arrested and the obstruction went on more rapidly. He had not given a dose of morphine in fifteen years to any patient on whom he had performed an abdominal section.

DR. TALLEY, in closing, said the principal point he wanted to emphasize was the importance of early operation, because he believed that most of the patients could be saved if reached and operated upon early enough.

A REVIEW OF ONE THOUSAND OPERATIONS FOR GALL-STONE DISEASE WITH ESPECIAL REFERENCE TO THE MORTALITY.

This was the title of a joint paper by Drs. WILLIAM J. and CHARLES H. MAYO, of Rochester, Minn. The paper was read by Dr. Charles H. Mayo. In one thousand operations for gall-stone disease there were 50 deaths—5 per cent.—counting as a death every patient operated upon who died in the hospital with-

out regard to cause of death or length of time thereafter; 960 for benign disease, with 4.2 per cent. mortality. More than one procedure through a single incision, only the major was counted, therefore 101 cholecystostomies and 44 cholecystectomies in connection with common duct operations were not included. Of 673 cases operated upon by cholecystostomy there was a mortality of 2.4 per cent. This group included most of the acute infections. In no case did the stones re-form in the gall-bladder. This was the operation of choice in the average uncomplicated case, and especially if there was or had been cholangitis.

Of cholecystectomy, there were 186 operations, with a mortality of 4.3 per cent. This operation was employed for special indications, such as cystic duct obstruction, thick-walled gall-bladders suspicious of malignant disease, and cholecystitis without calculi. There were 137 operations for stone in the common duct, with a mortality of 11 per cent., 7 per cent. from the operation, and 4 per cent. from secondary complications after more than three weeks. Of the cases operated upon during the quiescent period, with little jaundice and slight infection, all recovered. There were four cases with extreme icterus from obstruction, who had subcutaneous hemorrhages at the time of operation (purpura). All of these died; 4 cases of complete biliary obstruction in which the common and hepatic ducts were filled with clear cystic fluid and no bile, all died. Including malignant disease, 14.6 per cent. of the total were of the common duct; 40 cases of malignant disease, with 22.5 per cent. mortality; 2 cases with cancer of the gall-bladder now alive and well more than two years after operation; 2 additional favorable cases of more recent date. Of the remaining malignant cases, a few received marked palliation, but the majority were but little benefited.

ENTEROSTOMY.

DR. J. W. LONG, of Greensboro, N. C., stated that the important measures to be accomplished were (1) the drainage of gas and feces from the intestine. (2) In mechanical obstruction, relief of distention, pain, vomiting and toxemia. (3) In septic conditions depletion of the inflamed bowel and peritoneum, over-coming intestinal paralysis and sepsis. (4) Protection of the peritoneum as in typhoid perforation. (5) Nourishment of the patient by making an artificial mouth.

Enterostomy was employed only in the most desperate cases and in those where it was indicated the patient is always in imminent peril of speedy dissolution from some of the conditions above indicated. In all forms of intestinal obstruction the patient suffered from distention and absorption of the toxins. When septic peritonitis was present the sepsis itself produced suspension of peristalsis, which was sufficient to account for the obstruction. In mechanical obstruction, to this factor was added painful peristalsis. In recent years enterostomy had been applied

to a number of conditions other than intestinal obstruction *per se*, the principal indication being feeding the patient through the fecal fistula. This operation had been applied to cases of inoperable carcinoma of the stomach, a fistula being made in the jejunum and the patient fed through it; life prolonged and the patient made more comfortable. Enterostomy was also to be applied to typhoid perforation, catching up the perforated bowel and fastening it to the wound, it being more quickly done than closure of the perforation; at the same time the bowel was drained and the patient fed through the fistula.

DR. LONG reported eight cases of enterostomy occurring in his practice in twenty-two years, with 5 recoveries, or 62½ per cent.

Conclusions.—He drew the following conclusions:

"1. Enterostomy is a life-saving measure and never an operation of choice. 2. Enterostomy is not indicated where a more ideal surgical procedure is feasible. 3. In the hands of an experienced, carefully trained, competent surgeon capable of dealing with grave emergencies, enterostomy need rarely be resorted to, but the better the surgeon the more quickly he will adopt any measure which will rescue his patient. 4. Every abdominal surgeon must, according to the abundance of his material, find cases in which only enterostomy can with propriety be done. 5. When an enterostomy is indicated, to hesitate is to lose the patient; to operate promptly, dextrously, and with celerity means to tide the patient over the imminent peril and spare him for future consideration."

DR. JAMES A. GOGGANS, of Alexander City, Alabama, said that drainage of the distended intestines was very important. He made it a rule, if possible, when he did a laparotomy for any trouble whatever to drain the intestine in order to let it regain its elasticity and move the fecal current along as it should. He commended the author of the paper for advocating enterostomy and draining where the intestine was greatly distended in the class of cases under consideration.

DR. J. GARLAND SHERRILL said that enterostomy had a place in surgery in those cases where complete surgery could not be done; but whenever a surgeon sent a patient away from the operating table with an open intestine, he subjected the profession and himself to criticism from the laymen who did not understand the condition. Therefore, he would lay it down as a rule that no enterostomy should be done in any case where it was possible to do complete surgery, and instead of widening the field for enterostomy surgeons should strive to contract it.

DR. I. S. STONE, of Washington, D. C., said the essayist must have gotten hold of a number of very difficult and delayed cases for operation. He thought the idea of the essayist was simply this, that rather than let a patient die from obstruction he would catch up a loop of bowel and make an artificial anus. This was the old-fashioned way of doing enterostomy, and the essayist got

as good a mortality as most surgeons would have gotten under the same circumstances.

DR. LONG, in closing, said it would seem that he had unfortunately ran afoul of quite a number of cases in which it seemed proper to do enterostomy. These eight cases were spread over a period of more than twenty-two years of practice. He doubted if any surgeon had a better percentage of recoveries in cases of acute intestinal obstruction by any method than that which he had reported, namely, $62\frac{1}{2}$ per cent.

DR. I. S. STONE, of Washington, D. C., read a paper entitled THE ABUSE OF PURGATIVES BEFORE AND AFTER ABDOMINAL SECTION in which he said that purgatives should be given as evac-uants, and should not produce hyper-catharsis, whether administered before or after abdominal section. Bland evacuants, such as castor oil, aided by suitable enemata, would empty the bowels without causing severe exhaustion. The writer agreed with Ochsner's method. The excessive purgation, hyper-catharsis, commonly employed, was intended not only to empty the bowels, but to perform additional service, namely, to remove collections of serum or other fluids which might be in the peritoneal cavity.

A large majority of the sections made at the present time might be called minor pelvic or abdominal. In these no infection existed, nor was the intestine in any way involved. Such cases required only the mildest evacuants, with sterile diet in the preliminary treatment. He deplored the extreme and unnecessary purgation to which these patients were frequently subjected. If the minor abdominal cases were not in need of hyper-catharsis, one might next consider how consistent was this rigorous catharsis in very ill patients.

Vomiting, paresis, ileus and excessive distention after operation were frequently exaggerated and aggravated by the administration of the worse than useless cathartics which were usually given. No remedy had been discovered for vomiting due to anesthesia, and this fact should interdict the annoyance given patients by using purgatives before normal peristalsis had been restored. The only remedy of value for vomiting was the regulation of stomach contents, both as to character and quality of substances ingested. The stomach tube was therefore an instrument of great value, if one had need to reach and treat this viscus with a view of obtaining rest and relief of distressing emesis.

It had been shown that patients had bowel movements (peristaltic) after surgical operations, because they were ready to act rather than because one had found any method to produce such results. Hyper-catharsis did more than anything short of venesection, or the use of dangerous heart depressants, to unfit patients for prolonged anesthesia and operation. The prompt administration of purgatives after operation appeared to cause vomiting and reversed peristalsis, and to add to the general discomfort of the patient. The temporary paralysis of the intestines in nearly every case was to be desired, and nearly all patients

having been properly prepared would recover far more satisfactorily with perfect rest until normal peristalsis returned than with the aid of all sorts and kinds of irritants intended to produce quick movements of the bowel. If the intestines were not actually scoured by catharsis and had only been fairly well emptied of excess of gas and fecal matter, they would respond to treatment after operation with far greater ease than when made absolutely empty.

A REVIEW OF THE TREATMENT IMMEDIATELY BEFORE AND AFTER ABDOMINAL SECTION.

DR. L. S. MCMURTRY, of Louisville, stated that the directness and simplicity of surgical methods were proportionate to the accuracy of pathological knowledge. The marked changes which had characterized the evolution of the modern aseptic surgical technique illustrated the truth of this observation. Present methods were wonderfully simplified in comparison with those of the early antiseptic era when chemical germicides played a conspicuous role in every phase of the scheme of operation.

The general indications for preparatory treatment in cases of abdominal section were to cleanse the alimentary canal thoroughly without violent disturbance or exhaustion; to put all the eliminative functions in the best possible condition, and to favor in every way a tranquil state of mind and body.

More than a year ago he became satisfied that to put the patient to bed for three days, or even longer, as was practiced by many, was not the best course of preparatory treatment. There was positive advantage in having the bowels cleaned out in a relatively short time, as the patient was not relaxed by purgation and was less prone to suffer from toxic changes. Prolonged and irritating catharsis increased the nausea and vomiting of ether and chloroform anesthesia. A prolonged period of preparatory treatment impaired the patient's strength and depressed the nervous system.

There were exceptional cases, of course, such as associated functional and organic disease of other organs than that for which the operation was proposed. If these disturbances were the result of the disease for which the operation was to be done, no good could come of delay; but when such associated conditions were distinct from the disease for which the operation was contemplated, and which might be improved by treatment, a judicious course of preparatory treatment should be observed. The same rule should be applied to cases of anemia, and in cases of acute diffuse infection which might become circumscribed, preparatory treatment might be utilized with advantage.

In the cleansing and disinfection of the skin, we must accept at the outset the established fact that sterilization of the skin from a bacteriological standard was impossible; yet mechanical cleansing would for all practical purposes free the skin of all active germ action and provide for immediate primary union of wounds.

In the effort to accomplish this, the important fact had been overlooked that the unbroken skin was endowed with a power of resistance to the activity of its own and other germs; and when the epidermis was cracked, denuded and broken by irritating germicides, and scrubbing with hard brushes, this natural resistance was impaired and infection occurred. Mechanical cleansing would remove germs readily from smooth and unbroken cutaneous surfaces. For these reasons the brush and chemical germicides should be discarded, and only soap and water and alcohol should be used, applying these with gauze instead of the brush.

In the after-treatment only the most simple course was necessary in average cases. The routine use of purgatives here, as in the preparatory treatment, was to be avoided. The patient should be allowed to move about in bed freely, and should be given water as soon after operation as it could be retained.

DR. WILLIAM P. NICOLSON, of Atlanta, Georgia, read a paper entitled

THE EMPLOYMENT OF CELLULOID PLATES FOR COVERING OPENINGS
IN THE SKULL IN OPERATIONS FOR EPILEPSY,
BRAIN TUMOR, ETC.

He said that celluloid was a material which remained indefinitely in the tissues without irritation or disturbance, and the physical character of it was such that it could be easily shaped with scissors to the required size and shape for adjustment to the opening to be covered. Its harmlessness in the tissues was demonstrated to him many years ago by the absence of any irritation from a celluloid testicle introduced by him into a patient's scrotum. Given such a material, one was enabled to enlarge the opening in the skull to whatever size he might desire, knowing that he could cover the opening and protect the brain from subsequent injury or from undue protrusion from want of support. In operations for epilepsy it not only protected the brain from subsequent pressure, but left an increased space, which was measured by the thickness of the individual's skull.

After describing the technique of inserting the celluloid, the author reported a case of cyst of the brain which produced epilepsy. He also reported two cases of Jacksonian epilepsy and one of exploratory operation on the brain.

Although the duration of the cases reported did not give a long observation of results, the author felt safe in making the following claims for the routine application of this principle to all operations where the surgeon was compelled to make openings of any size in the skull: (1) It was safe, and did not add any extra risk to the operation. (2) It not only removed the pressure and irritation, which the surgeon was endeavoring to combat, but by its resistance prevented a recurrence from the subsequent consolidation of the coverings in a false position due to atmospheric pressure. (3) It protected the patient from external influences, and

not only made him feel safer, but he was actually safer. (4) It enabled surgeons to be much more untrammelled in the amount of bone that they could remove. (5) It prevented deformity, which especially, when beyond the hair line, was necessarily great in large bone removals.

DR. RUFUS B. HALL, of Cincinnati, Ohio, read a paper entitled

CASES IN WHICH EARLY DIAGNOSIS OF CANCER OF THE BODY OF
THE UTERUS WAS MADE.

To show that an early diagnosis of primary cancer of the body of the uterus was possible, or that a diagnosis could be made while the disease was yet very limited in extent, the author reported two cases. Of the many cases of cancer of the body of the uterus coming under his observation, only these two were seen early enough to make a diagnosis while the disease was limited to a very small area. Adeno-carcinoma was found to be the variety of the disease in each case. It was this form of the disease that most frequently attacked the body of the uterus, and if recognized early it promised great immunity from recurrence. The disease could be diagnosed in its incipency if surgeons systematically curetted every suspicious case and made repeated microscopic examinations of the scrapings removed from the uterus until they confirmed or disproved the presence of malignant disease.

CONTRIBUTION TO THE ORIGIN OF ADENOMYOMA OF THE UTERUS

DR. J. WHITRIDGE WILLIAMS, of Baltimore, Maryland, after calling attention to the anatomical appearance of adenomyomata of the uterus, and the various theories which had been advanced according to the origin of the epithelial structures contained in them, described a uterus removed at autopsy from a woman who died just after delivery as the result of hemorrhage from placenta previa. At the time of its removal the uterus apparently presented the characteristic appearance of the organ immediately following delivery, except that the area of placental attachment covered two-thirds of its interior, instead of being more circumscribed and limited to the anterior or posterior wall, thus indicating in all probability that interference with its blood supply had led to a much more extensive implantation of the placenta than usual.

On making a sagittal section through the uterus after hardening, numerous irregularly-shaped, more or less oval areas, of a dull white appearance, and varying from a millimeter in diameter to structures five by ten millimeters in their various dimensions, could be seen throughout the entire thickness of the uterine walls, which measured three centimeters in their thickest parts. These areas were most abundant immediately beneath the endometrium, but could be traced outward through the entire thickness of the uterine wall to its peritoneal covering. Upon microscopic ex-

amination they were found to consist of typical decidual tissue, which was made up of the characteristic decidual cells and glandular spaces lined by cuboidal epithelium.

The speaker stated that so far as he could ascertain this was the first case in which such a distribution of decidual tissue had been observed, and then proceeded to discuss the importance of such an observation in contributing toward determining the derivation of the epithelial structures contained in adenomyomata. In his specimen there could be no doubt as to the origin of the decidual areas, and every one must agree that they were derived from the uterine mucosa. Their wide distribution throughout the uterine muscle precluded the possibility of their having resulted post-partum, and indicated most conclusively that they must have existed prior to the onset of pregnancy. Such being the case, the specimen afforded a most beautiful example of the presence of tissue derived from the endometrium being scattered throughout the myometrium of an adult woman, and should myomata happen to develop in their vicinity, a most satisfactory basis for the development of an adenomyoma would be offered.

The speaker then mentioned the fact that in not a few cases the glandular elements in typical adenomyomata showed changes identical with those occurring in the menstruating endometrium, and held that the development of the decidual tissue in his case seemed to make it probable that where portions of Muellerian tissue were scattered through the myometrium, they might undergo the same changes as the normal endometrium, namely, menstruation and decidual formation.

The speaker then referred briefly to the literature upon the histogenesis of adenomyomata, and pointed out that Von Recklinghausen's contention that they were of Wolffian body origin, which at first had been received with great enthusiasm, had gradually lost ground, so that the vast majority of recent writers hold that such structures are developed more frequently from Muellerian than from Wolffian body elements, some even going so far as to state that only the former mode of origin was possible. The speaker, however, made it clear that he did not wish to be understood as taking so extreme a ground, but felt that while the vast majority of such growths were clearly derived from Muellerian tissue, conclusive evidence against the Wolffian body origin of certain cases had not yet been and probably never could be adduced.

DEVELOPMENT OF FIBROIDS OF THE UTERUS AFTER ABLATION OF THE APPENDAGES.

DR. J. WESLEY BOVÉE, of Washington, D. C., stated that the large number of published cases of fibroid tumors that had undergone malignant degeneration, or that had broken down, became infected or underwent other changes in structure detrimental to the lives of their unfortunate possessors had swept away the old

ideas as to their benignancy. Pathologists were now searching for a distinct borderline between benign and malignant soft uterine myomata. Recurrent myomata, while not so positively dangerous as cancer, must be considered malignant. Between these and sarcomata there was not always a distinct difference. Five cases were cited. Of these, two were operated upon for non-infectious disease, two were victims of infection, and in one the condition requiring removal of the appendages was not known.

Did the sudden change in the pelvic circulation incident to the ligation of the utero-ovarian blood-vessels in double salpingo-oophorectomy act as a cause of the subsequent fibroid degeneration of the uterus? This question might be reasonably answered negatively, else such degeneration might logically be seen commonly instead of rarely. Yet it might be possible that hemorrhagic infarcts in the uterus might occasionally in that manner be formed that would result in hyperplasia of connective tissue and be the origin of fibromata.

In considering the changes in the uterus after ablation of the appendages in the lower animals, the author quoted the experimental work of Hunter Robb and others, and stated that from these experiments and investigations, one could find but one theory upon which to base a cause for the development of fibroids after double salpingo-oophorectomy. This was the endarteritis obliterans, noted by Benckeiser. The speaker wished the relation was clearer and more cases could be cited in substantiation. In all the cases of development of fibroids of the uterus after removal of the appendages cited in the paper, the tumors were multiple, showing the existence of a number of foci, and pathologists had been interested in endarteritis obliterans in the uterus as the origin of fibroid tumors. The cases of such development of fibroids after castration were probably rare, and their existence must be due to some rare cause, such as was this form of endarteritis. In the absence of a better explanation he was disposed to accept this one.

DR. JOSEPH TABER JOHNSON, of Washington, D. C., in a paper with the title,

THE EFFECT OF SUSPENSIO-UTERI ON PREGNANCY AND LABOR,

contended that very few, if any, such injurious effects need be feared as had been frequently charged against the operation of suspensio-uteri. That it sometimes failed to cure was true, but that was not the charge. By ventro-suspension he did not mean ventro-fixation. He was free to admit that the uterus should not be securely fixed into the abdominal wound or to the abdominal wall in women likely to become pregnant. It was quite certain that some of the pains of pregnancy and difficulties of labor which had been charged against suspension were really the result of fixation. In over one hundred suspensions

done by himself he only knew of two pregnancies. These were both normal. In one case the labor was so rapid that the child was born before the doctor's arrival, and he knew from recent examinations that there had been no return of the retroversion. The other case he delivered in November last after a five-hour normal labor, without chloroform or forceps. The author mentioned the number of suspension operations performed by other operators, and concluded by saying that when the retrodisplaced or prolapsed uterus was suspended, not fixed, according to the technique of the author of the operation, it appeared to him to be the best operation yet devised for the great majority of women suffering with this displacement irrespective of the fact that they might become pregnant subsequently.

TYPHOID FEVER AND APPENDICITIS.

DR. JOHN C. OLIVER, of Cincinnati, Ohio, called attention to the possibility of these diseases being so irregular in their manifestations as to be mistaken the one for the other. He cited illustrative cases in which these mistakes had been made. A case was also reported in which an attack of appendicitis was followed within a month by an attack of typhoid fever. The possibility of mistaking the perforation of a typhoid ulcer for an acute attack of appendicitis was exemplified by the report of a case of walking typhoid in which perforation of the ileum occurred. The author's conclusions were : "(1) That typhoid ulcers may appear in the glandular structures of the appendix and give rise to a typhoid appendicitis. (2) That the infiltration of the ileum and cecum in typhoid fever may be so great as to give rise to a distinct tumor mass in the right iliac fossa. (3) That the Widal test is of but little, if any, value in the early diagnosis of the disease present. (4) That the leucocyte count proved in his series of cases to be of value in distinguishing between the two diseases. (5) That an exploratory laparotomy in typhoid fever is not devoid of danger. (6) That abdominal incision is imperative when it becomes necessary to establish the differential diagnosis between a typhoid perforation and fulminant appendicitis. (7) That in the absence of perforation cases of typhoid appendicitis should not be operated upon."

DR. P. F. CHAMBERS, of New York City, read a paper with the title,

THE PROBLEMS PRESENTED TO THE GYNECOLOGIST TWENTY-FIVE YEARS AGO AND TO-DAY,

in which he said that the problems presented to the gynecologist of that date were entirely different from those of to-day, and as different, he had no doubt, as would be those of twenty-five years hence. To illustrate the class of diseases that patients had twenty-five years ago and were admitted to hospitals,

and the methods of treating them in vogue then, he gave the diagnoses of all the patients who were admitted to the Woman's Hospital of New York at that time, and the operations which were there performed for the relief of these conditions. The peritoneum was the surgeon's *bete noir*. Abdominal surgery, then in its infancy, constituted but a little part of the work of the gynecologist. This was before the days of asepsis. Antiseptic surgery was then in vogue; consequently the mortality of all abdominal work was still so great the abdomen was never opened except in desperate cases, such as for the removal of ovarian cysts, or the ovaries in cases of intensely severe dysmenorrhea, or very large fibroids as then advocated by Battey, Tait or Hegar. For other causes, for which now the abdomen was readily opened, it was then a sealed book.

Except where retroversion of the uterus was due simply to an elongation of the ligaments, and when the uterus was small, was easily replaced, and the force from above was slight, the author preferred the ventro-suspension operation in all cases. Then he would perform the operation for shortening of the round ligaments either by exsecting a portion of the ligament and bringing the ends together, or by looping the tube upon itself. He never did a ventro-fixation. An example of conservative surgery upon the uterus was given in the case of fibroids.

The Trendelenburg posture had had more to do with the solving of the gynecological intra-abdominal problems than any other aid in the technique of the operating room.

UNVEILING EXERCISES.

The monument erected by the Association to its founder, the late Dr. W. E. B. Davis, was unveiled in Capitol Park with fitting ceremonies Wednesday, December 14th, at 11 o'clock. About five thousand people attended these exercises, including the members of the Association. After an invocation by Rev. Dr. L. S. Handley, Dr. Chas. M. Rosser, of Dallas, Texas, was introduced, and delivered the address of presentation. The statue was unveiled by Elizabeth and Margaret Davis, the little daughters of the beloved physician. Dr. R. M. Cunningham, acting Governor of the State of Alabama, accepted the statue in behalf of the State in an eloquent address. The statue, in behalf of the city, was accepted by Hon. John C. Forney, the representative of Mayor Drennan, who was unavoidably absent.

THE MANAGEMENT OF ACUTE GENERAL PERITONITIS.

DR. J. GARLAND SHERRILL, of Louisville, considered two forms of infection. First, acute septic peritonitis, in which the poison was so intense that the patient died from a profound toxemia before the local changes had progressed to the point of pus formation. The second type was general suppurative peritonitis, in

which pus was found free in the peritoneal cavity without any localization of the process. The two forms resulted from infection following perforations of the alimentary canal, rupture of the urinary or gall-bladder, ileus, abdominal operations, puerperal infection, and disease of the ovaries and tubes. Many cases, especially of the septic type, resulted fatally regardless of the time they were seen or the treatment employed, while some responded to medical and more to promptly applied surgical measures. The various methods of medical treatment were considered, and the position taken that these cases were surgical, except where operation was refused and the patient's condition would not permit surgical interference. Under such circumstances the medical treatment should be planned with reference to the causative condition, if this could be determined, and a distinction should be made between perforations of the stomach and those of the intestine, and also those cases in which there was reason to believe the intestinal wall was intact. In the first emphasis was laid upon absolute rest of the stomach to limit leakage; rectal lavage and nutrient enemata were advised. In the second class (intestinal perforations) gastric lavage, small rectal enemata to unload the lower bowel could be employed, and opium used freely while the patient was nourished per rectum. In the third class with intact intestine, gastric and rectal lavage, purgation and nutrient enemata were recommended. Heat and cold were considered the best topical applications, and the patient's position should be suited to the location of the causative lesion.

In considering the surgical treatment of this disease, much stress was placed upon early operation as a measure for the prevention of general peritonitis, while the process was yet localized. The outcome of a given case would depend upon the following factors: (1) The virulence of the infection; (2) the quantity of the infecting medium; (3) the resistance of the patient; (4) the activity of the organs of elimination; (5) the time at which the patient came to operation; (6) the rapidity and thoroughness of the surgical procedure. It seemed to the writer that the special technique of the operation was of less importance than the dexterity of the surgeon and the care with which he did his work. The author found that by flushing he could best free the peritoneum of infectious material, and usually drained. The patient should have the usual treatment given all abdominal cases.

SOME FURTHER ADVANCES IN RENAL SURGERY.

DR. JOHN B. MURPHY, of Chicago, made a forcible plea for more conservative surgical work on the kidney and ureters in the future, saying that surgeons must consider the importance of preservation of any portion of a kidney that was still in a condition to functionate, on account of the enormous mortality associated with the removal of this organ. The mortality in the past following the removal of a kidney that was secreting practically

the normal amount of urine varied from 29 to 35 per cent. He reported six cases of conservative operations on the kidney. In all of them the enlargement of the pelvis of the kidney was almost equivalent to, and in many instances larger than, the kidney itself. In cases of great dilatation of the pelvis of the kidney, formerly it was his custom to remove the kidney until he realized that it was practically a normally secreting organ, and that the dilatation of the pelvis was due to ureteral obstruction, and that there was no good reason for taking out the kidney when the sac was removed, regardless of the position of attachment of the ureter to the sac, as this varied in every case. He believed in connection with surgery of the kidney, that surgeons were coming to a time when they would examine the kidney carefully, cautiously, and then decide, as in certain lesions of the stomach, that this or that portion shall be removed and the remaining portion husbanded.

DR. C. JEFF MILLER, of New Orleans, read a paper on the subject of

VAGINAL CESAREAN SECTION,

in which he reported a case and summed up the advantages of the method as follows: (1) In severe eclampsia, when the woman is unconscious between the convulsions, the cervix rigid and elongated, and delivery imperative, it is always preferable to abdominal section and, under proper surroundings, may be preferable to metal dilators or manual dilatation. (2) In severe cases of accidental hemorrhage, when the cervix is closed, it is safer than the other method of accouchement forcé, owing to the rapidity with which the uterus can be emptied, and should be given preference over abdominal hysterectomy, which is generally advised. (3) It may be considered in other conditions where Cesarean section is indicated, except in contracted pelvis or dystocia, arising from maternal or fetal disproportion. It has not the disadvantages of an abdominal operation; the peritoneum need not be opened unless hysterectomy is to be preferred for malignancy, and there is less shock than follows abdominal operations. (4) It is not more dangerous than attempting to deliver either by version, or forceps, when the os is not fully dilated, if done under strict aseptic precautions.

DR. LEWIS C. BOSHER, of Richmond, Virginia, during the past few years had had occasion to operate on seven cases of

DERMOID CYSTS OR FISTULÆ OF THE SACRO-COCCYGEAL REGION. The patients sought relief either on account of the presence of annoying exudation or after some traumatism had given rise to the formation of abscess, with the usual train of inflammatory symptoms. The cases operated on by the writer were all in male adults.

After referring to the diagnosis and prognosis, the author said that the usual methods resorted to for treating inflammatory fistulous tracts would seldom result in permanent cure. Complete

extirpation of the fistula and sac must be performed to prevent a recurrence. It was to be noted that this was not always possible, as in a case reported by Watte, where complete extirpation would have involved opening the spinal canal, with serious injury to the nerves.

DR. MAGNUS A. TATE, of Cincinnati, Ohio, in a paper on the subject of

HEMATOMA OF THE OVARY,

presented a study of the cases which he had collected from the literature. These cases showed that three periods of life markedly predominate as a predisposing factor in the causation of hematoma of the ovary: First, before or during birth; second, at or near the first menstrual flow; third, early adult or child-bearing period.

In studying this variety of cases collected, he presented a few facts of importance. Klob had stated that in frequency the follicular variety was by far the commoner. Scott, in operating for ovarian disease, stated that hematomas were frequently found. In this the author concurred and did not believe that hematomas were so rare as the paucity of case reports in literature would lead one to believe. Hemorrhage might collect in small, dark patches or be so diffuse as to destroy the parenchyma or even the ovary itself. In size, hematomas varied from that of a hazelnut to a good-sized orange. In no case reported was a diagnosis positively made before section, except the one reported by Edebohls, and this diagnosis was questioned by everyone who took part in the discussion. The cases uncomplicated were free from fever, but pain was almost a constant symptom. Vaginal examination disclosed almost constant tenderness. Sometimes the ovary was fixed, and the pain frequently severe. Schultze and Riedel reported hematomas in new-born infants. Winckel saw the follicular variety of hematoma following petroleum burns, phosphorus poisoning, typhoid fever, cerebral hemorrhage, tuberculosis and heart failure. Edgar reported a case where the hematoma ruptured and caused a pelvic hematocele; and Boldt a case where the hematoma ruptured and peritonitis resulted. Two cases of hematoma were reported in which the hematomas became cystic and had twisted pedicles. Garrigues gave the history of a case associated with vicarious menstruation; Janvrin, a case of dysmenorrhea where, on section, there was salpingitis of both tubes, abscess of right, hematoma of left ovary; and Murray, a case of abscess of left ovary and hematoma of right. Kramer reported a case associated with purpura and epilepsy; and Edebohls, one where hysterioepilepsy complicated. Wylie had a case where electricity was the probable cause. Tate, a case following a long, tedious labor; Reamy, one where one ovary was removed and a portion of the other, and subsequently the patient had two children. Ricketts reported one associated with a large ovarian tumor, one with a dermoid, one with a suppurating appendix, one

where the left hematoma was removed, the right being normal, and in one year later the right ovary had to be removed for a hematoma. Wenning operated upon a case of double hematoma, the patient suffering from excruciating pain when an examination was made. The age of child-bearing women who were afflicted with hematoma of the ovaries varied from fifteen to forty years, and the left ovary seemed to be more frequently affected than the right.

PATHOGENESIS AND SURGICAL TREATMENT OF TUBERCULAR PERITONITIS, WITH REPORT OF CASES.

DR. WILLIAM E. STOKES, of Salisbury, N. C., after dwelling on the pathogenesis, divided tubercular peritonitis into four forms—the adhesive, suppurative, tympanitic, and ascitic. He quoted extensively from the literature of the subject, referred to the modes of infection, gave synopses of cases, histological examinations, and reported six cases. After describing the surgical technique, he said that operation was contraindicated in cases of tubercular peritonitis, whenever there was an advanced tuberculosis of the liver, lung, kidney, intestines, glands, or when the exudate within the peritoneal cavity was solid. What the actual changes in this infection of the peritoneum were, or what reaction was brought about in the local lesions and the peritoneum itself by the mere abdominal incision, remained problematical. Was it the mechanical action brought about by the air and sunlight; the increase of the peritoneal resistance, or whether, after the operation, a local reaction in the periphery of the tuberculous nodes took place, or an increased phagocytosis brought about absorption of the tubercular product, with the formation of new connective tissue, as had been shown in experiments on animals, still remained unsettled. However, through this process, it was claimed that a local reaction was thereby induced, and the absorptive power of the peritoneum increased.

DR. H. J. BOLDT, of New York City, read a paper with the title,

TREATMENT OF UTERINE BLEEDING.

in which he supplemented his former report on the use of stypticin, the name applied by its introducer, Dr. Martin Freund, to cotarnine hydrochlorate, in various cases of uterine hemorrhage, his opinion of the therapeutic value of this agent being based on seven years' experience with it. He first briefly described stypticin, which was a base obtained from narcotin by oxidation. It occurred as a micro-crystalline yellow powder, was soluble in water, and had an intensely bitter taste. A résumé of its physiological action followed.

The author then cited a number of cases in which he used stypticin with marked effect, and gave also those in which it was

ineffective. In 35 cases of fibromyomata, 11 were more or less benefited, while 24 were not. In one case of excessive menstruation due to an interstitial fibroid, the relief was very marked. In 9 cases where hemorrhage was due to cancer of the uterus, the result was negative. Complete cure followed in from two to six days in five cases of post-*puerperal* bleeding after removal of retained placenta particles. In conjunction with curetting, stypticin was found effective in hyperplastic endometritis, but in the glandular form results were negative. In one case out of five of *retroversio-flexio-uterus* with endometritis, the menorrhagia was relieved without resort to surgical intervention. In chronic *retro-endometritis* five of nine cases were more or less benefited. In various forms of non-suppurative pelvic inflammation only 3 out of 23 patients were not relieved by stypticin. In irregular bleeding during pregnancy stypticin had been found very beneficial, and no unfavorable symptoms had been noted. In profuse menstruation in virgins, without changes being found in pelvic organs, only 5 of 17 patients were not benefited. In atypical bleeding during the climacteric period, if no pathological cause was found, stypticin usually gave a satisfactory result.

The author remarked that while stypticin was not a panacea for all cases of uterine bleeding, he had found it better than any other remedy. In some instances it had practically served as a specific. If no effect at all was produced after three large doses had been given (from $2\frac{1}{2}$ to 5 grains), it was useless to continue the drug. Likewise, in fibroid, it was not recommended to continue its use if two hypodermic injections of 5 grains each at intervals of four to twelve hours did not cause a diminution of the hemorrhage. An important fact was that the author had never noted any harmful results from stypticin, even when administered in such large doses as 5 grains every three hours. In some instances it also relieved the patients of pain associated with the profuse bleeding.

In instances of too profuse menstruation, the author found the best plan was to begin with one-grain doses, three times daily, about one week before the expected flow, and as soon as the flow began to let the patient take $2\frac{1}{2}$ grains every three hours, to be continued during the entire period. In instances of metrorrhagia, from $2\frac{1}{2}$ to 5 grains might be given at intervals of from two to three hours until the bleeding was lessened; then the dose might be decreased to from 1 to $2\frac{1}{2}$ grains at intervals of three to four hours. If a quick result was important, it was best to give 3 to 5 grains in a 10-per-cent. solution subcutaneously into the buttocks, using the customary antiseptic precautions. Because of the disagreeable taste of stypticin, it was best administered in the form of capsules, the pharmacist being ordered to put the powder dry into the capsule. It might, however, also be given in tablet form.

DR. HENRY T. BYFORD, of Chicago, in a paper on

SOME POINTS IN THE TECHNIC OF ASEPTIC OPERATING,

said he did not offer any new methods, but emphasized the necessity of more thoroughness in those already used. The method he employed consisted in (1) twenty minutes' scrubbing with green soap and water; (2) three minutes in dilute acetic or citric or oxalic acid; (3) five minutes in strong alcohol; (4) five minutes in a 1-2,000 solution of mercuric chloride in water.

The author considered the use of rubber gloves open to the objection of macerating the cuticle with danger of their being punctured and allowing septic sweat to escape.

DR. W. D. HAGGARD, of Nashville, reported a case of

ENCEPHALO-MENINGOCELE

in a male child four months of age. Operation was performed July 16, 1902. The child weighed six pounds. The tumor weighed five pounds, and measured 23 inches in diameter one way, and 17 inches another.

Dr. Haggard also described an easy method of instituting peritoneal gauze drainage through the cul-de-sac.

DR. J. B. MURFREE, of Murfreesboro, Tennessee, read a paper on

STRANGULATED HERNIA.

DR. E. DENEGRE MARTIN, of New Orleans, reported two cases of

CANCER OF THE APPENDIX.

OFFICERS.

President, Dr. Lewis C. Boshier, Richmond, Va.

First Vice-President, Dr. John D. S. Davis, Birmingham, Ala.

Second Vice-President, Dr. I. S. Stone, Washington, D. C.

Secretary, Dr. W. D. Haggard, Nashville, Tenn., re-elected.

Treasurer, Dr. Charles M. Rosser, Dallas, Texas, re-elected.

Louisville, Ky., was selected as the place for holding the next annual meeting, in December, 1905.

TRANSACTIONS OF THE OBSTETRICAL SOCIETY OF LONDON.

Meeting of December 7, 1904.

*The Vice-President, SIR WILLIAM JAPP SINCLAIR, M.D.,
in the Chair.*

LIEUT. COL. A. G. STURMER, I. M. S., forwarded a short communication on a case of

ABDOMINAL GESTATION.

which had been under his care in the Madras Government Maternity Hospital, and the parts removed were shown. When the patient first came under observation the periods had ceased for five or six months. There was no sign of fetal life and the abdominal swelling seemed to decrease in size during the four weeks she was under observation. At the operation a female fetus, weighing two pounds six ounces was removed. Part of the placenta was separated without much difficulty from omentum and intestines, but in attempting to separate the lower attachments free bleeding was caused. It was found that the fundus of the uterus had come away with the placenta, and as the bleeding could not be otherwise controlled, supra-vaginal hysterectomy was performed, both appendages being removed at the same time. The tubes appear to be macroscopically intact and there was no history of any such occurrence as a rupture. But, pending further investigation, no opinion is offered as to whether the condition is primary or secondary.

DR. CULLINGWORTH and DR. AMAND ROUTH referred to cases which showed that the Fallopian tube may, by virtue of the remarkable properties of unstriated muscle, resume its normal dimensions and appearance very quickly after the escape of an ovum from within it.

On the motion of Dr. Cullingworth the specimen was referred to the Pathological Committee.

SUPRA-VAGINAL VERSUS PAN-HYSTERECTOMY FOR FIBROIDS.

DR. WALTER TATE related three cases of intestinal obstruction following operations for fibroid tumor of uterus, with special reference to the choice of operation.

CASE I.—Single woman, aged 23, had suffered from menorrhagia for twelve months, with gradual enlargement of abdomen. Tumor reached to one inch above umbilicus.

Myomectomy performed on May 6, 1902. No trouble till two

days after operation, when vomiting commenced. On May 9th pain and vomiting worse; no result from aperients. At 10 p. m. abdomen reopened, knuckle of bowel found adherent to scar at back of uterus. Bowels well opened next day, followed by uninterrupted recovery.

CASE II.—Single woman, aged 46, with history of menorrhagia for seven years, especially severe the last twelve months. Solid tumor discovered reaching half way up to umbilicus. On December 18th supra-vaginal hysterectomy performed. Good progress during first week. On eighth day after operation temperature began to rise, and patient complained of pain. On ninth day some distension appeared, and aperients failed to act; sickness began. Sickness continued, pulse rate increased to 140, distension increased, and on December 28th abdomen was reopened. Several coils of bowel found adherent to stump, and some serous exudation tracking up towards left lumbar region. Convalescence protracted, but ultimately good recovery.

CASE III.—Young married woman, aged 22, was confined of her first child March 10, 1904. Some fever on sixth day of puerperium, and tender swelling discovered in hypogastrium. Three weeks later second swelling discovered in right iliac region. Physical signs rather suggested dermoid disease of both ovaries. On April 14th supra-vaginal hysterectomy was performed. Patient got on well, and bowels acted well on morning of 17th. The same evening patient had abdominal pain and began to vomit. Pulse rate rapidly increased, looked pinched and ill, vomiting continued, aperients and enemata entirely failed. At 5 p. m. on 18th abdomen reopened. Knuckle of bowel found constricted by band of omentum firmly adherent to stump. Band of omentum separated and ligatured. Bowels acted on next day, and patient made good recovery.

MR. ALBAN DORAN considered that the flaps of the cervical stump should be closed by a continuous suture to avoid increase of the number of knots, the most unfavorable feature in supra-vaginal hysterectomy. An enema as well as purgatives should be given on the second days. In his own practice, one case of obstruction, which he related, had occurred in ninety-eight supravaginal hysterectomies. In respect to the danger of obstruction, the Abel-Zweifel theory, that a portion of the uterus above the os internum should be saved as well as the ovaries, was of importance, as it seemed to lessen the risk of future psychological disturbance. It involved, however, a big stump which increased the chances of intestinal obstruction. This uncertainty as to physiological effects was an objection to pan-hysterectomy; besides, the sutured flaps of peritoneum deep in the pelvis might cause obstruction. Von Winckel recently related a case where a large vaginal hernia developed so that the patient complained that she often sat on her bowels, an eminent instance of a bad intestinal complication.

DR. PETER HORROCKS considered that pan-hysterectomy for fibroids was more difficult to perform, was followed by greater

shock, had a higher mortality and left the pelvic floor in a weaker state than supra-vaginal hysterectomy. He thought that of the three cases reported by Dr. Tate two should be left out of consideration on the ground that one being a case of myomectomy and the other being associated with subinvolution after delivery, adhesions were specially likely to occur and obstruction to ensue. One case of obstruction in 150 supra-vaginal operations was about the average, and that was his own experience. He considered that a continuous suture was better than an interrupted one for the peritoneum covering the stump; in his own practice he used fine silk.

DR. GALABIN did not consider Dr. Tate's contention proved by the evidence adduced. He thought that the method of doing the operation might make a difference. He made no flaps, but cut across at the narrowest point, about the level of the internal os. But if fibroids involved the cervix so that he could not get below them, he always chose pan-hysterectomy. He adopted rather an elaborate suture, but thought that it was worth the increased time occupied, as he had never had a case of intestinal obstruction after either supra-vaginal hysterectomy, pan-hysterectomy or vaginal hysterectomy. He first closed the broad ligaments by uniting their anterior and posterior faces with sutures at the site of the round ligaments and the uterine arteries. He then united the peritoneum in a transverse line, getting a sero-fibrous union by piercing the anterior peritoneum twice and using a continuous suture of fine silk. The stump was dealt with by stitching the edge of peritoneum left above the bladder in stripping it down, and was mainly covered by bladder and could come in contact with intestines only at its posterior edge. In pan-hysterectomy he united the peritoneum in precisely the same way. Similarly, in vaginal hysterectomy he preferred to stitch the peritoneum so as to fix the pedicles of the broad ligament in the vagina. In two cases in which he had had occasion to reopen the abdomen within two or three years after supra-vaginal hysterectomy, the line of suture was observed to be free and smooth, and no trace of the silk was discoverable.

DR. HERBERT SPENCER said that he had relinquished the operation of supra-vaginal hysterectomy in favor of total hysterectomy for over five years. He had called attention two and a half years ago to the subject of intestinal obstruction after supra-vaginal operations and had published a case of his own. On several occasions during the last ten years he had referred to the risk of septic peritonitis from infection of the cervical stitches long after the operation. Moreover, not uncommonly cases were met with in which pus was discharged per vaginam after the operation. Hemorrhage from, and the development of malignant disease in, the stump were other possible disadvantages. The lists of picked cases published produced a false impression of the advantages of supra-vaginal hysterectomy. The cases required following up, and the later results recording before a correct esti-

mate could be reached. Prolapse after total removal he regarded as a boggy and not more likely to occur when done for fibroids than after a similar operation for cancer. Personally he had never seen a case. For uniting the peritoneum he preferred a purse string suture. He adopted the practice of leaving salt solution in the abdomen—he thought that it tended to prevent the occurrence of adhesions.

MRS. BOYD questioned whether Dr. Tate's second case should be regarded as a case of typical mechanical obstruction and thought it rather a condition of peritonitis with secondary matting of bowel.

DR. CULLINGWORTH stated that he had performed Baer's operation very nearly 100 times and had had four undoubted cases of genuine intestinal obstruction, but in no case was it noted that the intestine had become adherent to the line of suture on the uterine stump. In regard to the relative merits of supra-vaginal hysterectomy and so called pan-hysterectomy, he had an open mind. He had had little, if any, personal experience of pan-hysterectomy, so had no means of comparing the one with the other in his own practice. But as far as the mortality statistics put forth by C. P. Noble and by Olshausen showed, total extirpation was attended with a higher mortality and most operators were agreed that total extirpation involved a longer operation. He could not subscribe to Dr. Tate's opinion that the simple transverse wound left after the operation at the bottom of the pelvis afforded little or no risk of dangerous intestinal adhesion, for he had known it to occur with fatal results in two cases after vaginal hysterectomy for cancer. He thought that Dr. Tate was relinquishing the supra-vaginal for total hysterectomy on very slender grounds, if his conversion really rested on the evidence brought forward in his paper.

DR. LEWERS had met with two cases only of intestinal obstruction after abdominal section. In both cases supra-vaginal hysterectomy had been performed. In one of these cases a coil of small intestine had become adherent to the scar over the stump across the floor of the pelvis. In the other, obstruction was due to a coil of intestines slipping through a hole in the omentum. Dr. Lewers had never had any trouble after supra-vaginal hysterectomy due to suppuration in the neighborhood of the stump. He had done a moderate number of pan-hysterectomies for fibroids, but the operation took longer, and to his mind presented no advantage over the supra-vaginal operation.

DR. TATE replied.

SIR W. J. SINCLAIR showed a

GLASS VAGINAL DRAINAGE TUBE

which he had devised to obviate the difficulty usually arising from the omentum being drawn into and plugging the openings. It

was furnished with a number of very small holes and was so shaped as to be self-retaining.

DR. LEWERS and DR. GALABIN were both satisfied with the results obtained by employing a strip of gauze in those rare cases where it becomes advisable to drain into the vagina by opening the pouch of Douglas.

REVIEW.

PROGRESSIVE MEDICINE. A Quarterly Digest of Advances, Discoveries and Improvements in the Medical and Surgical Sciences. Edited by HOBART AMORY HARE, M.D., Professor of Therapeutics and Materia Medica, in the Jefferson Medical College, Philadelphia, assisted by H. R. M. LANDIS, M.D., Assistant Physician to the Out-Patient Medical Department of the Jefferson Medical College Hospital. *Volume IV*. December, 1904. Diseases of the Digestive Tract and Allied Organs: Liver, Pancreas and Peritoneum; Anesthetics, Fractures, Dislocations, Amputations, Surgery of the Extremities, and Orthopedics; Genirourinary Diseases; Diseases of the Kidneys; Practical Therapeutic Referendum. Pages, 374. Lea Brothers & Co., Philadelphia and New York, 1904.

The current number completes the publication for 1904. It is the work of a smaller staff of contributors than formerly on account of the omission of the subjects Pathology, Physiology, and Hygiene, and shows a reduction of nearly one-fourth in the number of pages for the year. As a partial offset to this contraction a slight reduction in price of the bound volumes has been made, and it has been made possible to obtain them in paper covers, at a much lower price. To those not interested in the subjects omitted the new arrangement is a gain, to the majority it is a distinct loss. The standard of the work has always been high and its field comprehensive, and it is to be hoped that the recent lapse has been only temporary. The present volume shows one change in the list of contributors, Dr. J. Dutton Steele assuming charge of the section on Diseases of the Digestive Tract and Allied Organs.

BRIEF.

A Clinical Study of Sixty-two Cases of Intestinal Infection by the Bacillus Dysenteriae (Shiga) in Infants.—L. E. La Fétra and John Howland (*Archives of Pediatrics*, March, 1904) give reports of their cases which were seen at the Vanderbilt Clinic during the months of July, August, and September, 1903. There were 62 cases, of these two were seen during June, 33 in July, 18 in August, and 8 in September. Eight of the patients were under three months; 14 were between three and six months; 15 were between six and nine months; 9 were between nine and twelve months, and 15 were over one year; of 1 the age was not stated. As routine measures, cow's milk was immediately discontinued and not resumed for several days; in breast-fed infants the nursing was forbidden for a time. Barley water, rice water or broth was substituted for the milk. Free catharsis was obtained by means of calomel and castor oil. Other drugs were rarely used.

There were 4 known fatal cases. It is possible that some other of the cases observed died, but not while under observation, nor were any in a moribund condition when last seen.

Type of Infection.—There were 42 cases in which the acid type of organism was found; 15 were infected with the alkaline or true Shiga type; in 5 cases both types of the organism were found. The agglutination reaction of the blood of the patients was not used at all for diagnosis. It has been proven in children as well as in adults that this reaction while often present is uncertain and unsatisfactory because it appears late, never before the end of the first week, and often not before the second or third week, and may disappear early in the prolonged cases; so that we can make our diagnosis by an examination of the stools more easily and satisfactorily than by the blood. In addition to the measures for treatment outlined above when there was great irritability of the intestines with tenesmus and numerous small stools, rectal irrigations without or with paregoric were employed. For temperature that gave rise to nervous symptoms irrigations and alcohol sponging were resorted to. A bismuth mixture was used in a few cases. From an analysis of these 62 cases, it seems that certain points are worthy of special note.

(1) The unexpectedly great prevalence of the dysentery organism in cases of diarrhea in infants, at least during the summer months. Thus out of 64 consecutive cases examined in the Vanderbilt Clinic, 62 were positive.

(2) All types of diarrheal disease, as characterized by their clinical symptoms, are to be found among these cases. Some were examples of severe and some of mild ileocolitis; others could only be classed as the mildest form of intestinal indigestion. The

course of the disease, while usually short, was prolonged in 8 cases.

(3) As compared with cases of summer diarrhea of other years those in this series were in general much milder; and possibly this was due to two factors: (a) The cool summer. (b) The increasing knowledge among the tenement population of the care of infants and their food.

(4) The striking number of breast-fed infants, 14 in 62 cases, more than 20 per cent. of all.

(5) The serum treatment was not given in a sufficient number of cases to warrant any conclusions. While of apparent benefit in some cases, there were others in which no effect whatever was noticed. It may be that larger dosage is necessary, but if so, the serum must be more concentrated than at present.

Extrauterine Pregnancy.—Cases of extrauterine pregnancy at term are rare enough to warrant mention. M. H. Ferré (*Ann. de Gyn. et d'Obst.*, Dec., 1903), reported one seen and operated upon after death of the fetus at term. The fetal sac was marsupialized and the placenta was eliminated in fragments from time to time. An abscess eventually formed in Douglas' cul-de-sac, but this was drained through the vagina, and the woman finally recovered.

Chambrelent (*Bull. de la Soc. d'Obst. de Paris*, No. 1, 1904) describes a fatal case in which communication of the fetal sac with the uterine cavity through the tube allowed amniotic fluid and later meconium to be discharged by the natural passages. This interfered for a time with diagnosis. When operated upon, the fetus was found fully developed and macerated, and the sac was marsupialized. The mother died soon after.

Pierre Cageaux (*Ann. de Gyn. et d'Obst.*, Feb., 1904) says that expulsion of a membranous sac, a mould of the uterine cavity, is not a constant occurrence in extrauterine pregnancy, and that its expulsion does not necessarily imply the death of the fetus. It is not, however, demonstrated that it is not connected with some serious disturbance in the ovum. The membranous sac is composed of the superficial layer of the modified uterine mucosa.

Multiple Neuritis of Pregnancy.—Among the rarer complications of pregnancy is multiple neuritis, a case of which is recorded by Oettinger (*Bull. de la Soc. d'Obst. de Paris*, No. 4, 1904). The affection involved the large nerve trunks, especially of the lower extremities, but including temporarily, the facial and pneumogastric nerves. It began at the end of the second month of a pregnancy which appeared normal, and recovery, which was eventually complete, did not begin until after delivery. V. Cathala and P. Trastour (same) also report a case of multiple neuritis in pregnancy without any of the usual causes of such an affection. The symptoms increased progressively with the development of the fetus and improvement began on the day of labor. Psychical, cardiac and trophic disturbances were observed, in addition to sensory symptoms and loss of control of bladder and rectum.

THE AMERICAN
JOURNAL OF OBSTETRICS
AND
DISEASES OF WOMEN AND CHILDREN.

VOL. LI.

MARCH, 1905.

NO. 3.

ORIGINAL COMMUNICATIONS.

CAN OUR PRESENT METHOD OF UTILIZING THE
PRINCIPLE OF AXIS-TRACTION IN OBSTETRIC
PRACTICE BE FURTHER DEVELOPED?

BY

ARTHUR C. JACOBSON, M.D.,
Brooklyn, N. Y.

WEBSTER, in his admirable text-book, remarks that the Tarnier improvement (the axis-traction forceps) marks the last stage in the evolution of the forceps. The writer wishes to take issue with this dogmatic statement, for he believes that it is possible to extend the principle of axis-traction control considerably beyond that afforded by Tarnier's device *per se*, and that the apparatus to be described in this contribution may properly be regarded as another step in the evolution. The further facilitation of difficult childbirth is its aim, and while as yet the writer has no clinical results to present, and while this article is of merely a preliminary nature, it is nevertheless believed that a satisfactory exposition of the academic aspects of the subject is herewith offered.

While it is undoubtedly true that purely academic presentation or discussion cannot determine absolutely whether certain qualities

of the writer's apparatus, which may possibly be regarded in the light of disadvantages, will be more than counterbalanced by other features of the instrument constituting decided and obvious advantages, and while practical trial only can settle this and other questions relative thereto, yet the writer is desirous of presenting at the present time a theoretical consideration of his projected extension of the axis-traction principle, both because of the impossibility of reporting the practical results of clinical trial for some time to come and because of the possibility that other workers in the field of obstetric science may at some time or other raise the question of priority. In this connection the writer wishes to state that his studies and original research work along this special line have covered a period of about three years. The apparatus to be described is, in fact, a final result of efforts which have produced several widely varying devices representing evolutionary steps toward the perfected instrument.

Witkowski, in his "History of Midwifery," gives some instances of crude attempts to reinforce or supplement the physical force employed by the obstetrician in forceps deliveries, but none of these would appeal to the modern obstetrician as based upon sound principles, either obstetric or mechanical, nor do they answer in any way to other incidental requirements that must be met, in order to conform to, and adequately and scientifically satisfy, all the conditions. They bear no more relation, particularly in the sense of priority, to the author's apparatus than did the forceps of Hermann to that of Tarnier, some writers having erroneously argued that the one anticipated the other.

While it is a fact that certain theoretic rules, plus the judgment that comes of experience, enable us to determine the indications for the forceps operation with a reasonable degree of scientific exactness, yet no obstetrician can have failed to be impressed by the difficulty which often attends this operation and especially the degree of physical exertion frequently required, even when the orthodox obstetric indications have been clearly met and traction made as nearly as possible in the pelvic axis.

With a view to the obviation of this and other practical bugbears, the author, about three years ago, conceived the idea of a traction apparatus that would "substitute mechanical exactness for human fallibility" and yet not usurp the personal equation. Such an apparatus has been designed for him by Mr. Clifton W. Wilder, M.E. (Massa. Inst. Tech.), and is shown in the accompanying cut.

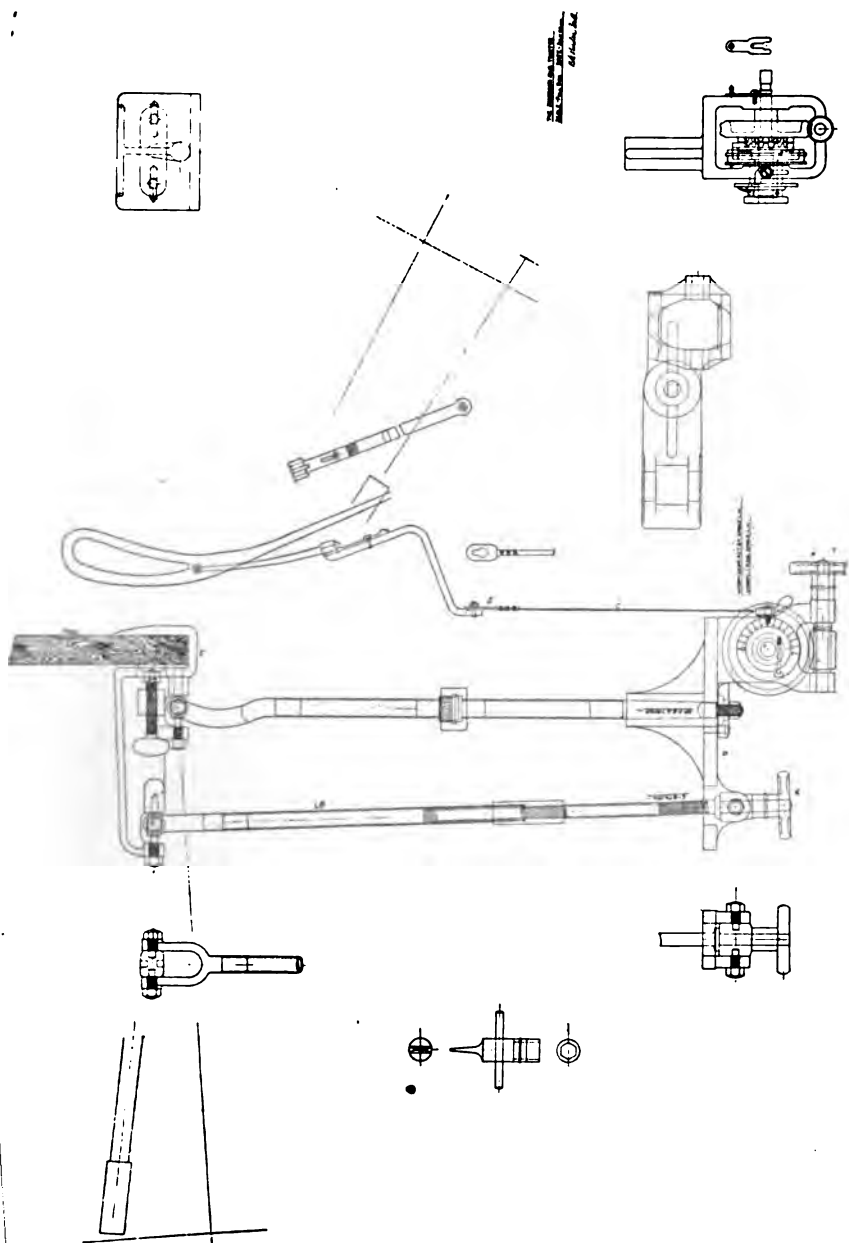


Fig. 1. Jacobson's Axis-Traction Apparatus.

The instrument is designed to attach to the axis-traction forceps and to find its *point d'appui* at the edge of any table, to which it may be readily clamped.

The apparatus consists of the rods "A" and "B," the steel tape "C," the cross bar "D," the clamp "E" and the weighing device or dynamometer (with dial) "F." There are also a spring, a worm, a gear and a drum which are not very well shown in the diagram.

Traction is applied to the forceps at "G" by turning the hand-wheel "H" in a right-handed direction. "H" communicates with the worm and gear, by which means the traction is obtained. The traction is transmitted to the drum by means of a spring which being calibrated registers the amount of traction upon the dial.

The power exerted by the operator is multiplied about fifty times.

The cross bar "D" is rigidly fastened to the rod "A." The rod "A" is fastened to the clamp "E" by a universal joint, "I," and the cross bar "D" moves in the path of an arc with "I" as the center. (The universal joint allowing of free lateral motion in case of deviation from the plane of the pelvic axis.)

The position of the cross bar is determined in the vertical plane by the length of the bar "B." "B" also is fastened to the clamp by a universal joint ("J"). "B" is a telescoped rod and is lengthened or shortened by turning the hand-wheel "K." The wheel "K" is



Fig. 2. Universal Joint.

fastened to the cross bar by a flexible joint, so that either tension or compression may be exerted by the rod "B," that is to say, in non-technical language, the entire apparatus may be raised or lowered as desired.

When traction is exerted on the traction rods of the forceps the tendency of the cross bar "D" will be to move upward. It can move upward, however, only as the bar "B" is lengthened. This

enables the operator to keep the traction rods parallel to the forceps at all times and also steadies the "pull."

The rods "A" and "B" can be removed from the clamp "E," the cross bar can be detached from all three bars, and when detached the apparatus will occupy a very small space and will weigh less than eight pounds. The rod "A" will also be divisible into two sections.

The dynamometer is designed to register up to 125 pounds, and can be read to one pound.

Eight revolutions to the right of the hand-wheel "H" will draw the forceps through a distance of one inch. This may be done as slowly or quickly as desired.

Most of the metal parts may be nicked and the whole may be readily sterilized (except the spring of the dynamometer). In practice, however, the axis-tractor could be connected to the forceps by an assistant, and the two hand-wheels, which would be the only parts touched, covered with sterilized gauze.

Backward revolution of the hand-wheel "H," that is to say, to the left, takes off the traction. This may be accomplished as rapidly or slowly as desired, according as the operator wishes to imitate the natural intervals between pains, or in case the patient should come out of the anesthetic suddenly. The steel tape slackens, while the apparatus is held in position by rod "B" until the operator is ready to resume, when the "slack" is first taken up by revolving "H" to the right until the dial begins to register.

In constructing the device certain features shown in the cut will be departed from. For instance, the lower of the two universal joints will be advanced so as to be in the same vertical plane as the upper one. This is to insure perfect freedom of movement and non-interference, so to speak, on the part of rods "A" and "B"; as the cut shows them it will be apparent to one having a practical knowledge of mechanics that they would, under certain conditions, as in following marked rotation of the forceps, fail to act in perfect harmony. Some other details shown in the diagram will also be simplified.

The telescoped bar "B" will not only steady everything during traction, by reason of preventing the cross bar "D" from rising upward, except as the operator may desire to approximate the traction rods toward the forceps in order to keep them parallel, and thus direct the *line of traction* properly, but it will also maintain the apparatus at any point of its "orbit" where it may happen to be

at a given stage of delivery. That is to say, the apparatus will not drop back unless the telescoped bar be shortened by means of the hand-wheel "K."

Briefly, hand-wheel "H" controls traction and hand-wheel "K" the line, or direction, of traction.

The multiplication of the power (about 50 times) applied to the hand-wheel "H" will be secured by means of the worm and gear principle. Thus it will be seen that, ordinarily, *only a pound or a fraction of a pound* of power will be called for on the part of the operator, making the operation of the apparatus a delicate and facile procedure, and there will be no excuse for exceeding a safe limit of traction for its amount will be measured and indicated on the scale.

The bar "A" is forked at the table end in order to straddle that part of the table clamp immediately beneath it, *i. e.*, at the beginning of a delivery. "B" also is similarly forked. On account of advancing the lower universal joint, as before mentioned, it will be necessary to fork "A" half its length, so that it will straddle the lowest part of the table clamp as well as that part immediately beneath it, and so that when not being used the entire apparatus may be swung out of the way beneath the table.

The freedom of movement will be such that even rotation of the forceps will be followed with ease; of course there will be the fullest sweep from below upward and *vice versa*. All this means that the instrument will permit of circumduction or movement at any angle that will be required.

It is believed that the traction furnished by this device will be so steady and so precise that a minimum will be needed—less than with *manual* traction by the methods now in vogue. The low amount of power registered by the dial in most cases will, it is expected, cause some surprise.

The finer mechanical details have been completely worked out but are not fully illustrated in this article, although all the drawings are in the possession of the author.

It is not the author's intention to make extravagant claims for the axis-tractor, but merely to indicate reasonably self-evident facts. It provides for measured, steady, and precise axis-traction and makes no demand on the muscular strength of the obstetrician. In short, the power is harnessed. There can be no doubt that the arduousness of many forceps deliveries does not tend to steadiness or precision on the part of the operator, and regarding measured

traction, no two obstetricians would "sense" pounds traction alike. In this respect the personal equation is less conservative than a semi-mechanical one, which, while it enables one to control mechanically the amount of traction, is also completely subordinate in all other necessary functions to the directing will of the operator. Doubtless in actual practice a safe limit of traction is often exceeded by powerful and enthusiastic men, and in addition such traction is often misdirected.

The field of this instrument may be defined to be in that class of cases in which the axis-traction forceps is indicated, particularly in those cases in which difficulty in delivery is anticipated, involving much physical exertion on the part of the operator. It is imperative that orthodox obstetric indications for a forceps operation be present and that that operation is clearly preferable to any other in a particular case.

During its use the relations of the head to the passages could be easily watched, just as under ordinary conditions.

The method does not eliminate nor even tend to usurp the personal equation. It (the personal equation) remains the paramount and controlling factor.

It substitutes steadiness for unsteadiness, mathematical precision for inexactness, measured traction for guess-work, and the principle has been pronounced sound by prominent obstetricians who have passed upon it.

It is fair to argue that somewhat elaborate art is to be preferred to the strenuous and derrick-like exhibitions sometimes witnessed in the lying-in chamber or maternity delivery room, on the score of humanity and the safeguarding of life and health no less than on the score of art. Expenditure of physical force will be obviated, to the greater comfort and efficiency of the *accoucheur* and the safeguarding of the pelvic and fetal structures involved. The uneven and jerky dragging and hauling on the forceps in difficult deliveries, not to speak of the natural tendency to employ the dangerous see-saw motion, will be entirely done away with. There will be no energy wasted, as is now the case in maintaining one's equilibrium while pulling. "Scientific manipulation is the requisite in obstetrics, not great force misapplied."

Its chief field will be in maternity practice, and, in skilled hands, to some extent in private practice, under very good conditions—good facilities and good assistance.

Those whose experience is limited or who are not accustomed to deliver by means of the axis-traction forceps *per se*, would always

do better to rely upon conventional methods rather than attempt one which calls for special skill.

Those who frequently use the axis-traction forceps and who can give the method a fair trial will probably concede to it a certain place among the mechanical resources of obstetrics, for it is believed to represent a rational attempt to put the forceps operation on a better, higher and altogether more scientific plane.

Even in easy cases greater precision in delivery would be attained, and here Webster's remarks anent the use of the axis-traction forceps in *every* delivery are *apropos*. He says: "Both for scientific and practical reasons the axis-traction forceps should entirely displace the older instruments. The chief obstacle to the wider use of the former has been the prejudice of those whose argument is that they have often enough been successful with the older instrument. This statement is on a par with that of the man who says that he enjoys a ride on an old-fashioned velocipede, and sees no reason, therefore, why he should change to the latest improved bicycle; nor will he understand until he has made a thorough comparison of the machines. . . . The axis-traction forceps needs only to be known to be appreciated, but requires to be studied in order to be understood. Its principle is very simple, and a knowledge of its working easily acquired by a little practice. If it be adopted, the old forceps may be relegated to museum shelves."

The axis-tractor is an instrument of precision that should add greatly to the efficiency of the Tarnier instrument, as the latter added to the efficiency of the ordinary forceps.

A. R. Simpson declared that "if a practitioner accustomed only to the use of the old forceps will use the axis-traction forceps in one or two difficult cases, he will find that it works with so much safety to the mother and child, and with so much ease to himself, that he will ever after use it in every case. There is no case, high or low, with presentation and position normal or abnormal, demanding forceps delivery where the axis-traction instrument may not be applied. Since it came into use the range of forceps application has been greatly widened, and the sphere of the competing operations, such as turning, embryotomy, and induction of premature labor, has become correspondingly narrowed."

"Through it the delivery of the head is possible with the least loss and misdirection of the force expended, and with the most perfect approximation to the axis of the pelvis." (Webster.)

Grandin believes that the axis-traction forceps is not only a

life-saving measure when every other type of instrument is liable to fail, but that it also saves fetal life with less liability to produce intracranial lesions or to inflict deep and serious damage to the maternal parts. It should be so made as to secure traction with the expenditure of the least effort on the part of the operator. He furthermore believes that compression of the fetal head must and will be avoided if the traction is made in the correct axis (here the writer would warn against the use of the screw across the handles being used as a compressor, the purpose of this screw being merely to lightly approximate the blades), and also points out how the traction may be made to assist rotation, the handles of the forceps being an ever constant index of the position the presenting part is assuming. The axis-tractor, as said before, will enable us to follow rotation with ease and mathematical exactness, the traction being directed at all times in the correct line.

In using the axis-tractor the following conditions should always be fulfilled:

1. Membranes ruptured.
2. Cervix fully dilated.
3. Bladder and rectum empty.
4. Positive diagnosis of position and posture.
5. Forceps clearly indicated.
6. Correct application of axis-traction forceps.
7. Normal diameters.*

The genitals would be prepared in the usual manner, no vaginal douche to be given except after frequent examinations or in case of dry vagina or suspicion of infection.

The legs would be held up with leg holders, or a sheet, and the patient's position on the table maintained by assistants. Anesthesia as under ordinary conditions.

The position of the patient on the table would be easily maintained. No special arrangement would be necessary. In fact, the minimum traction employed would make it easier to maintain the patient's position than under ordinary circumstances.

It is fitting here to quote W. S. Stone: "One of the commonest errors in obstetric technic is the attempt to do the impossible on a bed, and a more frequent resort to a hard table with more delib-

* As to its use in the presence of subnormal diameters, this would be governed by the principles of practice that are already established in the case of the axis-traction forceps. But the writer will suggest that, by reason of the steady, precise and *minimum* traction afforded by the axis-tractor, in conjunction, perhaps, with Walcher's position, it might be possible in certain cases, by means of it, to obviate some of the formidable obstetric operations, or at least narrow their fields.

eration at the beginning of an obstetric operation will often determine its successful result."

With the foregoing conditions strictly and fully complied with, this ultimate and logical extension of the principle of axis-traction could undoubtedly be utilized to great advantage (and with infinitely more safety than is afforded by our present methods, which are, in comparison, almost haphazard).

Pelvic, rather than cephalic application of the forceps, should be practised, in accordance with the views of Webster on this point.

The head should be well flexed and the occiput anterior. Occipito-posteriors would have to be converted by forceps, other methods, or nature, according to circumstances. In suitable cases occipito-posteriors might be delivered as such with the axis-tractor (rotation failing). But here it should be borne in mind that the axis-tractor would accommodate itself to rotation in the cavity, should rotation to the front there occur, as is apt to be the case when the axis-traction forceps is used.

A retrospect of human endeavor and 'human' progress gives us an intelligent perspective in these matters of obstetric, as of other, science. In many instances, and this is one, the foundation for the work has been laid by others. Tarnier's instrument is, fundamentally, a practical application of the theorem of the parallelogram of forces. He demonstrated that 40 kilogrammes traction at the brim tended to lower the head in the birth canal with a force of 30 only, while the pubes were subjected to a pressure of 26. These figures are approximate only, and of course apply to traction with the ordinary instrument.

Another thought that occurs to the writer at this point is in relation to the well-known conservatism of the profession in adopting novel departures in practice, however attractive. This is as it should be, and leads to the proper determination of values. On the other hand, ultra-conservatism, of which there is not a little even at this day, has blocked, with a stupidity that has been nothing short of asinine, the progress of the art. This spirit is more often discernible in the so-called leaders of the profession than it is in the rank and file, and it is also this spirit that has seemingly superseded, as an obstacle to progress, the factors that operated in the remote past, namely, superstition and ignorance. Like the poor, the mossbacks are always with us. Looking over the history of obstetrics, we find that Tarnier's improvement itself has been rather slow in winning full adoption by the profession, and it is

a fact that the early adoption of the obstetric forceps, in its primitive form (Chamberlen's), was for a time marked by an inability to accept practical possibilities, or even to intelligently conceive of them. Yet it is easy for us to comprehend the prejudice that must have met this now indispensable instrument, and why this was so. How dangerous, mechanical, and impracticable an innovation it must have seemed to our brethren of long ago. How many clumsy failures, complete or partial, marked its early use, due less to its somewhat crude form than to the human fallibility, ignorance and prejudice that sought to guide it. Chamberlen himself, in his attempted demonstration at Paris in 1670, before Mauriceau, was unsuccessful. The latter had invited him to use his forceps in a case of delayed labor.

Rotation to the front of occipito-posteriors by means of the forceps was declared malpractice only a few years ago, but by the efforts of Brodhead and others this procedure has been assigned its proper place in obstetrics.

And so with other advances. Zangemeister's recent warning regarding the Bozzi dilator applies equally to the axis-tractor, namely, that powerful instruments, while most dangerous when employed by the average practitioner, are harmless in the hands of the reasonably expert.

Experimental work with the axis-tractor as a meter to determine the amount of force required to deliver under ordinary conditions (assuming, for practical purposes, that extractive force, accurately directed, is equivalent to the expulsive force of nature) would, it seems to the writer, offer results far more valuable and reliable than those attained by Matthews Duncan and others in their experiments with the fetal membranes (*vide* "Duncan's Researches in Obstetrics"). Very interesting observations could also be made with it in regard to "quantities" of traction needed under *varying* circumstances. The laws of minimum and of safe maximum traction could be formulated with reasonable exactness. Moreover, the different stages of labor would doubtless present interesting differences as regards the amount of traction required.

The writer here begs to offer some reflections anent the questions of the capabilities for damage of this device, and of what may appear, to some, its complexity.

In the first place, the traction would be measured and we would soon be in a position, through experimental work, to predicate safe and proper dosage, so to speak, of traction under any and all given conditions. It seems to the writer that we have here a scien-

tific ideal possible of practical attainment that will reduce the damage factor to its lowest terms. The wonder is, as things are now, that more damage is not done. The possibilities of doing damage with the axis-tractor will reside, not in the instrument itself, but in the incompetent operator of it.

"No obstetric instrument has yet been devised which does not require a sentient power to guide it. The dread of possessing too great power in an obstetric forceps is a fallacy." (Wells.)

"Violence is the result of struggling feebleness, not of conscious power. Moderation must emanate from the will of the operator; it must not be looked for in his instruments." (Barnes.)

"It is sometimes necessary to exert a considerable force for some time, often in a constrained position, and the operator's muscles become fatigued and unsteady, the hand losing its delicacy of diagnostic touch and that exactly balanced control over its movements which it is all-important to preserve. The faculty of accurate gradation of power depends upon having a reserve of force." (Wells.) The axis-tractor, as said before, "substitutes mechanical exactness for human fallibility."

A prominent obstetrician, who has studied these plans, writes as follows: "In my advocacy of the axis-traction forceps I most frequently hear the criticism that the instrument is complicated. Of course this remark seems absurd to one accustomed to it. My impulse is to say that your addition is too cumbersome and complicated to be practicable. You may readily term my criticism as absurd. . . . If experts are to use it they ought to prefer accuracy, even though additional complexity be necessary to secure it." As a matter of fact, the axis-tractor is as simple a mechanism as can be devised for the purpose intended. It is based upon the simplest of mechanical principles. Simplicity has been borne in mind as a *sine qua non*. It may be seen, if fairly examined, to be not much complex than the Tarnier forceps itself.*

Slipping of the forceps during traction would be an accident

* That the axis-tractor will be easily manipulated, accomplish what has been outlined, and work smoothly and accurately is guaranteed by the designer, a mechanical engineer of large practical experience. It will really be a much simpler apparatus than the diagram might lead one to think. The parts concerned in the production of power and in measuring traction merely represent a new application of conventional mechanical principles in daily use in hundreds of machines. Anyone will be able to quickly take the apparatus apart and put it together again, the essential working parts mentioned above fitting each other in simple fashion and being held together by only one screw bolt, shown very plainly in the diagram.

It might be said here that bar "B" could be dispensed with if desired, but while simplifying the apparatus perfect control would thus be sacrificed.

fraught with absolutely no danger ; in the case of manual extraction this means damage almost invariably, aside from its disconcerting effect upon the operator.

Finally, it may be repeated that the axis-tractor in no sense represents a departure from sound obstetric principles, but rather a logical extension of a well-established one, carried, in fact, to its ultimate conclusion. It can hardly be consistently attacked as an evolutionary advance so long as it is conservatively limited to its proper field.

The reply to the question propounded in the title of this paper may be answered by each reader of the paper for himself. Personally, the writer feels that further development of present methods is perfectly feasible, and that it is reasonable to forecast that the advance will be as great as was the advance of Tarnier's improvement itself over the old style of instruments and methods.

The writer's most sincere thanks are due to Mr. Wilder for his highly intelligent collaboration. His work has been marked by a thoroughly scientific appreciation of the idea as a whole. It was certainly a difficult problem in "engineering" to submit him, and it is greatly to his credit as a versatile and well-equipped American engineer that he has applied the principles of his profession so cleverly in the field of obstetric mechanics.

The author will be grateful for expressions of opinions and for suggestions.

115 JOHNSON STREET.

THE PREVALENCE OF PUERPERAL SEPTICEMIA IN PRIVATE PRACTICE AT THE PRESENT TIME, CONTRASTED WITH THAT OF A GENERATION AGO.*

BY
STANLEY P. WARREN, M.D.,
Portland, Me.

IN these last days, while making the toilette of the lying-in room, I have often tried to remember what I did under like conditions thirty years ago, when the world, to me, was young.

My preceptor, Dr. Robert Hubbard, of Bridgeport, Connecticut, was accounted a famous obstetrician, not only by the laity, but also by his professional brethren. His practice in this department

*Read before the Lister Club, Portland, Me.

of medicine, which was entirely a family practice, was extensive, records showing that he once reported seven hundred confinements in two consecutive years. He was the leading obstetrical consultant throughout western Connecticut, and he had performed many times each of the capital operations, then in vogue, of midwifery. During my student life of two years with him he showed me no obstetrical cases, with a single exception. During that day I accompanied him to five houses between dinner and bedtime, at which he delivered five women. Probably I had very little to do with these labors, since I can recall none of their details. During my last—the second—course of medical lectures, which I attended at the old College of Physicians and Surgeons in New York City, I was assigned, at my own request, to a confinement, but I was prevented from tending it owing to absence from the city. Therefore I had no clinical experience with labor until after being in active practice some four months, when my first case presented itself. The child had been born before my arrival, and there was left little chance for me to display my professional skill except in the ligation of the cord, which I was able to accomplish successfully, though with much trepidation. My first opportunity to use the forceps came in the seventh case, whose clinical history I shall always remember. The patient was an Irish primipara, 43 years old. Labor commenced in the early morning of Tuesday, January 1, 1875, and progressed very slowly until the next Sunday afternoon. Then, under the direction of an older friend, I applied Simpson's forceps at the brim, but it required the combined strength of both of us upon the instrument to extract the child. It was dead, of course, and I well remember my chagrin as I stood looking at my first dead baby. The perineum was badly torn, and sutured immediately with silver wire, but no union followed, and the patient died of "childbed fever" seven days afterwards. Present comment upon our professional management of the labor would be reminiscent only; few obstetricians of that day had more than an occasional experience with operative delivery, and still fewer ever washed their hands before or during any childbirth. I suppose that we did the best that we knew at that period of obstetrical art.

My service of active obstetrical practice stretches, therefore, not only through the entire period of modern antisepsis, but back still farther into that controlled by the precepts and customs of the ancients. It began when a new page in our social, educational, and economic history was commencing. Empiricism in medicine

was dying; rationalism was just born. The seed of antiseptis, which occasional sowers had scattered through the centuries, was beginning to sprout. The stony ground of midwifery had been broken up by Dr. Holmes with his now famous charges of dynamite, first, by his paper "On the Contagiousness of Childbed Fever," and then by his replies to his critics, Meigs, Dewees, and the rest. The fallow ground was harrowed by Semmelweis, who demonstrated upon a wider scale the fact that puerperal fever was heterogenetic and preventable. In the '70s Lister and Pasteur developed the principles of the germ theory and their application to surgery, but it was not until late in the next decade that the profession began to see that these principles were the inalienable birthright of obstetrics also. Reference to those obstetric textbooks published after 1870 will illustrate how gradually the aseptic method of delivery was adopted. In the chapter on the conduct of normal labor in Cazeaux's *Midwifery* (5th American from the 7th French edition, 1873,) there is nothing said respecting any preparation of the patient or physician for labor. In a similar chapter Lusk's *Midwifery* (1st edition, 1884,) is also silent upon the same subject, though he says, in the directions for repairing the lacerated perineum, "the wound should be prepared by carefully washing away blood and clots with warm carbolyzed water." Galabin's *Midwifery* (1886) says: "Before making any examination, if his hands are cold, he should warm them by washing them in warm water. It is also a good precaution against the conveyance of any septic matter, in all cases, before making the first vaginal examination, to wash the hands first in soap and water, using a nailbrush, and then in some antiseptic solution. For this purpose either permanganate of potash, iodine, carbolic acid, or perchloride of mercury may be used." Parvin's *Obstetrics* (2nd edition, 1890,) gives full directions for sterilization of the patient, physician, and surroundings. And though to-day the long fight for asepsis has ended in the unquestioned adoption of its theories by the profession, strange to say, their practical application is still rejected by a large proportion of general practitioners. Although it is demonstrated by unquestionable results that the hazard of puerperal sepsis is removed from public midwifery, because there labor is conducted under compulsory asepsis, in contrast with the prevalence of the disease in the same institutions under former unclean methods, a large proportion of general practitioners still ignore these facts as they relate to private midwifery. There is a ready answer to my leading question so far

as it concerns the maternities of to-day and of the past generation; what comparison is there between its frequency in private practice then and now?

In adoption of the protective method of delivery in the home, obstetricians of to-day may be grouped into four classes, each class having relative rather than absolute divisions, and each merging into the class upon either side.

1. Those physicians who graduated before 1870; that is, prior to the present aseptic era. Most of these are now old men, who have generally given up active obstetrics, but who occasionally attend the labor of some member of a devoted family. The majority continue to adhere to the manners and customs of medical practice of their youthful days; they cling tenaciously to the ideas prevalent before the aseptic deluge, they are slow to adopt, even partially, the methods of the present, and look with the apathy of age upon new-fangled theories. A small minority keep abreast with modern progress, some even going to the extreme in acceptance of recent etiology and practice. Few of this class who are residents of cities accept confinements, but many who are country practitioners are still in active obstetrical practice, or, if not, continue to rule the medical world about them by force of years of experience or personal influence. The large majority of this class deliver women just as they did fifty years ago, without making any pretense at using the protective method, or else with such a burlesque of it as is restricted to a perfunctory moistening of the hands in a solution of bichloride.

2. A larger group of men in adult age, who were graduated during the transition period between 1870 and 1880, when the protective method of delivery was in evolution. Quite a share of their maternity work is among the wealthier patients, most of the teaching and hospital appointments are held by them, and they set the pace for the juniors as recognized consultants. Nearly all of this class have adopted the popular tenets respecting asepsis, to such a degree as is influenced by personal bias and environment. Some of them, who are surgical specialists, carry out in the lying-in room the strictest technic of the hospital, others lose sight of principles in adherence to individual fancies, and the remainder, who are obstetricians from necessity rather than from choice, go through a tiresome and disagreeable task with as little personal labor as is possible.

3. The graduates since 1890, all of whom have been taught modern obstetrics, and upon whom falls most of the confinements

among the poor and those allotted to externes of maternities. Many of this group are enthusiasts, sparing neither time nor strength for a clean record, others are careless in technic and do poor work, but all of them are avowedly antiseptists.

4. A fourth group of quasi obstetricians must be included in this generalization, that is, the midwives, using the word in the broad sense which takes in all women that assist at delivery, whether professional or untrained. It is inevitable probably that many of the births among the rural and civic poor will be attended by these women. In our sparsely settled communities the ordinary monthly nurse and the neighbors must of necessity, and not infrequently from choice will, be relied upon during childbirth, and the lower grades of foreigners in the cities will depend upon the midwife or friends for similar reasons. Here and there among this group is a graduate of a maternity training school, who does her duty under the most trying conditions with honor to herself and safety to her patient. It must be acknowledged also that a few professional midwives do fairly clean work, and know enough at least to call the physician in emergencies. But taken as a whole, the working capital of this group is almost entirely ancestral folk lore and servility, many having nothing but simply the maternal instinct to direct them. It is among patients attended by this class that sepsis and death riots, a fact which daily observation and reading warrants.

How large a proportion of births out of the entire number in this country is attended entirely by midwives is probably unanswerable, but depends largely upon locality. Among the later settled States, and in localities remote from towns many births happen which are never reported to authorities. The Registrar of the Department of Vital Statistics of this State informs me that he has no statistics upon that point. In Portland there were in 1903 1,040 births, of which 32 were reported by midwives; 1902, 1,064 births, 31 by midwives; 1901, 983 births, 35 by midwives. There is creditable authority for the statement that in one of the densest peopled wards of New York City over fifty thousand children were born in a single year, but only twenty thousand of these were delivered by physicians. These two isolated facts represent extremes simply, but it is probable that midwives are employed more often by our foreign-born than native-born people.

With this imperfect analysis of the present attitude of obstetricians, using the word in its widest sense, towards the protective method of delivery, we are prepared to consider the question—how

does their work, so far as it relates to the frequency of puerperal sepsis, in private practice, compare with that of a generation ago? To attempt to answer it we should know what were the facts regarding the disease then, and what they are now. While reliable statistics of hospital practice, both ancient and modern, are available, those concerning private practice during either period are practically worthless for my particular purpose.

I. To write the history of puerperal sepsis a generation ago is to retell the story of the kingdom of Infection. Students went directly from the dissecting room to the lying-in room, practitioners from wounds streaming with pus or from the most virulent fever. "What is the use of washing one's hands before making a vaginal examination? Will they not be just as dirty after it?" Every lying-in woman was expected to have "milk-fever" on the third day of the puerperium, from which many women, out of the total number delivered, died. But so far as can be learned from physicians of that time, it is improbable that the relative proportion of deaths from sepsis, in their private practice, was ever large. There were occasional years when epidemics of puerperal fever appeared among their puerperæ, one of which I remember in this city about twenty years ago, and almost every general practitioner had now and then a sporadic case of the disease. Persistent questioning of the older physicians shows that nearly all can remember one or two cases of this disease which have occurred to them during their entire practice, a few say that they have never met with the disease, while it is the universal agreement, that in private practice it was unusual. So far as puerperal morbidity is concerned, it certainly was common and expected, but since there are few statistics bearing upon the subject, we can estimate its frequency only by study of the general medical practice of that day.

In contrast with private practice, puerperal sepsis was prevalent, often to an astonishing degree, in public maternities. Fifty years ago it was almost certain death for a woman to be confined in a European hospital, and even in this country her chances for life were little better. In those days mortality due to septicemia in the Boston Lying-in Hospital averaged from 20 to 30 per cent., and grew to such proportions that the service was, on that account, discontinued for several years. The experience of this hospital was nearly universal throughout the world. It is reasonably sure at puerperal mortality from sepsis was relatively infrequent in

the private practice of the last generation, but correspondingly large in public practice.

As to the frequency of sepsis in the service of midwives of that day, it was presumably no different from that present under similar conditions now, because the bedside manners of the modern midwife differ in no essential respect from those of her mother. Both were and are uncleanly, and their results in the summary of morbidity and mortality are practically the same.

2. In trying to estimate the frequency of puerperal sepsis in private practice to-day the present data are more reliable than those of the past. But even in this statistical age, and remembering that statistics upon any subject are proverbially uncertain arguments, a moment's study will show that they are particularly unsatisfactory when used to determine the relative frequency in private practice of puerperal mortality from sepsis as distinguished from that from all other causes.

Medical statistics are derived from two sources, each of which differs widely from the other in essential data: A, from public hospitals and maternities, and B, from reports of Boards of Vital Statistics, from personal communications to journals and medical societies, and from private records. The quality of the professional service and nursing has a vital influence upon the data from which such statistics are compiled, a fact which must be given due thought when both are grouped for generalization.

A. Hospital reports are an integral part of the institutional machinery, they are made by those who are especially trained for that purpose, the scheme of each chart is the result of long study and wide experience, the details of clinical history are the observations of specialists and based upon compulsory obedience to authority, and the personal equation of the reporter is minimized by amalgamation with that of his confreres. The character of professional attendance given to hospital patients is of the best quality, that of experts who have every incentive of position and prestige for maintaining its excellence. Statistics compiled under such conditions are invaluable so far as they relate to public midwifery, but are not of much importance so far as they represent private midwifery. For since comparatively few women out of the entire number are, or ever will be, confined in maternities, while the vast remainder must be attended at home under widely different conditions of professional skill and nursing, statistics of public and private midwifery have little in common except basic principles.

B. Puerperal statistics of private practice are taken from various sources: (1) from reports of Boards of Vital Statistics, but these, even though bearing the stamp of such authority, have a limited value for my purpose. Each report is evidently merely a summary of minor reports, the latter in turn being compiled from certificates of individuals, upon whose reliability the entire fabric depends. Just here is the element of doubt, which lessens the scientific value of all such statistics. Take, for illustration of this statement, the Report for 1902 of the Department of Vital Statistics of Maine. In that year there were recorded 14,508 births and 10,675 deaths, in which latter are included 109 that were due to "the Puerperal state." The causes of these 109 puerperal deaths were further distinguished as follows: Accidents of pregnancy, 20; puerperal hemorrhage, 5; other accidents of labor, 3; puerperal albuminuria and eclampsia, 15; other puerperal accidents, sudden death, 26; puerperal septicemia, 40. Since there are but two small maternity wards in our State hospitals, and including an occasional delivery in the Portland city hospital during the service of the City Physician, in all of which probably less than fifty women are yearly confined, these are statistics of private midwifery. So far as they go they are criteria for estimating the frequency of puerperal septicemia in private practice of to-day. Using these figures as a basis for comparison, of 109 puerperal deaths, 40, or 36 per cent. of the whole number, died of puerperal sepsis, that is, one woman in this State out of every three who died during the puerperium, died of infection.

According to the same State Report for 1902, there were in Portland that year 1,064 births and 932 deaths, four of the deaths being listed as due to "Puerperal septicemia." By reference to the local records of the city it is shown that there were but three puerperal deaths returned during that year; one for puerperal convulsions, one for puerperal edema, and one for childbirth, while there were no deaths returned during that year for puerperal septicemia.

Although this Report shows the number of deaths in this State, certified as caused by puerperal sepsis for a single year only, it is reasonably fair to assume that the rate is about that of any of the later years. It is certain that these are the statistics of private practice only, for the reason given previously. In comparison with this record, let me quote the following figures.

The Report of the Mothers' and Babies' Hospital of New York shows that between Jan. 1, 1899, and Oct. 1, 1900, a service of

twenty-one months, there were 571 confinements in the hospital and 990 confinements in the Out-Door Department. Within this time there were two deaths in the hospital from puerperal sepsis, one of whom was brought to it moribund, and one from the same cause in the dispensary service; three maternal deaths in 1,561 confinements, or one death in five hundred patients.

The Report of the Boston Lying-in Hospital for 1900 shows that there were admitted in 1899 647 women, and that there were 653 births. There were four maternal deaths, none of which were due to septicemia. From 1890 to 1900—ten years—5,737 women were admitted, of whom five died from septicemia, or one woman to each eleven hundred deliveries.

Norris reports five hundred consecutive deliveries at the Preston Retreat, beginning Jan. 1, 1894, among which there were no deaths, and that the temperature charts during the first eight days of the puerperium showed that the temperature did not rise above 100 F. in 91.8-10 per cent.

Although it is impossible for me to prove the statement by actual figures, I believe that the statistics given in our State Report, as quoted, are incomplete; that is, they tell the truth, but not the whole truth. Puerperal deaths, caused in all human probability by sepsis, are returned to local Health Boards as due to peritonitis, exhaustion, pelvic abscess, etc., when the certificate should read, "Cause of Death, Puerperal Septicemia." The arrangement of diseases under which our State returns are made since 1900 is that of the Bertillon Classification.

In Section VII. of its authorized "Tables of Diseases and their Synonyms," which includes "The Puerperal State," is the following note: "Whenever a female at the child-bearing period of life is reported as having died of a disease which *may* have been puerperal, the certificate of death should be returned to the person who signed it for an explanation whether the disease was "puerperal or not." Under the leading heading of the Section are included fifty-two distinct causes of puerperal death, and under No. 137, "Puerperal septicemia," are mentioned "puerperal fever, puerperal infection, puerperal endometritis," and nine other distinct pathological conditions. Then follows, "*Do not include*: Septicemia (without qualification)." (The International System of the Classification of the Causes of Death.) Almost every one, conversant with the medical history of his locality, knows of one or more deaths from childbed fever which are never returned as such in the death certificate. The explanation for such misstate-

ments is undoubtedly this, that physicians in private practice either dare not tell the truth about the deaths of their puerpera, through fear of public odium and loss of professional prestige that would be likely to accrue to them, did the real cause of death become known to their clientele, or do not tell the truth because of honest ignorance of the facts. This personal opinion is strengthened by its agreement with that of our city Registrar of Births and Deaths.

2. A second source of facts for the statistician is medical literature; textbooks, reports of medical discussions, current medical journals, and private notebooks. The clinical conditions under which reports of this character are made,—the personal bias or degree of reporterial skill of the writer, the defects in professional supervision of the patient, and the influence which intermeddling with the physician's directions has upon the final result,—all these details have important bearing upon the value of statistics compiled from private practice.

In examining medical literature for facts relating to my subject one meets at once with difficulties. There is surprisingly little upon the topic which is based on definite knowledge or data apposite to the purpose. Conclusions are drawn either from personal, and therefore usually limited, experience, or from quotations from other writers whose reliability is inferred rather than proven, and theories are made to appear as facts to establish the arguments of the author. Because the writer has had a certain experience with midwifery among the wealthier class in an Eastern city, therefore his statistics are applicable to an agricultural community in the West! Some of our most prominent obstetrical societies publish reports of their discussions and the essays of their members, whose experience is largely that of specialists and whose practice is mostly in hospitals and consultations. Should the general practitioner attempt to carry out their conclusions in his own peculiar field of family practice, he is likely to find them impracticable or impossible. I am convinced that one of the chief obstacles which has delayed the universal adoption of the protective method of delivery is the attempt of many a conscientious family doctor to conduct labor in the home according to the strict aseptic technic of the hospital. Should textbooks be consulted, the majority are out-of-date even before the book is on sale, their statistics are taken largely at second hand from brother authors and from returns of foreign maternities, whose data is presumably, though not avowedly, compiled from patients of the

hospital class, and therefore not representative of ordinary American family practice. Even if a direct statement is made, it is almost necessarily conditional rather than positive. Thus Edgar says ("Obstetrics"): "There can be no doubt that the morbidity rate of birth in public and private practice is much greater than it should be. In maternity hospitals at the present day the death rate is probably less than one per cent. It is very difficult to estimate the frequency of puerperal infection outside of hospitals, since many deaths are reported as due to typhoid, malaria, pneumonia, etc., but it is undoubtedly less than it used to be."

Since commencing the preparation of this paper, the following paragraphs in current reading have been noticed as bearing either directly or suggestively upon the present frequency of puerperal septicemia. At a meeting of the Philadelphia Obstetrical Society Hirst said that he had to operate in a large number of these cases (puerperal infection) every year. "In the last three days three of the most desperate cases of puerperal sepsis were brought to the University Hospital in the ambulance." He had usually four to six such cases under observation continually. In a discussion on gonorrheal peritonitis (OBST. JOUR., July, 1904) Marx said that during the last six weeks he had seen from thirty to thirty-two cases of puerperal sepsis. Burtenshaw (*N. Y. Med. Jour.*, July 2, 1904), says: "And to-day—in spite of our knowledge of the cause of puerperal infection; in spite of—accepted principles of asepsis and antisepsis; in spite of—everything, although epidemics of the disease are a thing of the past, the mortality outside hospital practice probably is as high as it was forty or fifty years ago. With reason may it be asked, Why? and with reason may it be answered, Because of ignorant midwives, first; and second, because of disregard by the general practitioner of the rules of surgical cleanliness." Williams says (Milroy Lectures, reported in *Lancet*, June 25, 1904), in making a statistical study of the deaths in childbed occurring in the county of Glamorgan, Wales, "puerperal fever, though by no means as a general rule, selects for its ravages the most unsanitary localities. The large and fair-sized towns in Wales show much the same mortality as similar towns in other parts of the Kingdom. In the densely populated mining valleys the mortality from puerperal fever is very high," which he attributes, in great measure, "to unskilled and ignorant midwives." In a second Milroy Lecture, (*Lancet*, July 2, 1904), he says (in discussing the possible causative relation of measles, scarlet fever, and diphtheria to puerperal fever),

"the statistics and evidence collected by the author are all against it, and go to show that in almost every case the disease had been spread by midwives." Zweifel (*N. Y. Med. Jour.*, July 23, 1904): "Despite the perfection of asepsis and antisepsis in midwifery, fever in the puerperium is still frequently seen. The per cent. still varies in well conducted clinics between 19 and 28 per cent." He believes the cause to be in the infection of putrefaction of bloodclots that are to be found in the posterior fornix of the vagina of every newly delivered woman, and advises wiping out with dry sponges. Since putting this principle into practice, in 243 cases the morbidity was reduced to 5.7-10 per cent., a figure never reached before in his clinic. Horrocks says ("Management of Natural Labors," *Lancet*, 1904): "Strict asepsis is almost impossible owing to the difficulty of sterilizing the vulva and orifice of the vagina which the fingers and instruments must pass. On the other hand, recent research goes to show that the utero-vaginal secretions have special bactericidal powers which the introduction of antiseptics tends to annul." While, therefore, he gives full value "to the marked reduction in septic complications which has resulted from the introduction into midwifery of methods of modern surgery," he advocates "the abolition of the routine vaginal douche in all natural labors, and the avoidance, so far as possible, of such digital and instrumental interference as necessitates the after use of antiseptic irrigation." Berry Hart says (Abstract of paper on "The 20th Century in Obstetrics"): "Many other scientific workers have shown that puerperal septicemia is due to the invasion of the tissues of a puerperal woman by a pyogenic organism, that generally the disease is heterogenic and is preventable by antisepsis and aseptic measures. Despite these clearly ascertained facts, which should lead to perfectly definite and successful prophylaxis, the deaths from puerperal septicemia have not decreased in this country (England), but in some years have notably increased."

A single other quotation from current literature is sufficient. Hammond has a somewhat noticeable paper in the *JOURNAL OF OBSTETRICS* for June, 1904, which is based upon nine hundred and seventy confinements in his own practice without a maternal mortality. His cases were similar in character to those of the ordinary practitioner, quite a number were operative, and a few were of the graver class of emergencies. The field of practice was a mining town in the West, and quite a proportion of the patients belonged to the lowest order of foreigners. He says: "Respecting asepsis

it would seem that the multifarious procedures advocated by so many writers and teachers greatly overdo the matter. Good hot water with ordinary laundry soap, plenty of it, on hands with clean finger nails will make a reasonably competent sterilization. The comparative immunity from infection in patients attended solely by old nurses, who probably never wash their hands previously to making an examination and otherwise handling women, can be explained on the ground that dirt is not always septic."

It seems to the writer that a more plausible explanation for the freedom from infection, of which he speaks, than that which he suggests, namely, that "dirt is not always septic," is this—that the ordinary monthly nurse and the obliging neighbors who act as midwives do not make vaginal examinations, which the professional midwives do.

Williams' *Obstetrics* (page 777): "In private practice it is doubtful whether the results are materially better to-day than they were before the introduction of antiseptic methods, for the reason that the doctrines of asepsis have not yet permeated the rank and file of medical men, much less of midwives, to whose care is committed a very large proportion of obstetrical cases. Bacon, in an article based upon the records of the Chicago Health Department for the forty years before 1896, shows that puerperal infection was the cause assigned in 12.75 per cent. of women dying between the ages of twenty and fifty years. In 1873 20 per cent. of all women dying in Chicago between these ages succumbed to puerperal sepsis. In 1892 it was 6 per cent. and in 1895 7.3 per cent."

3. There is probably no series of facts more systematically collated than those pertaining to life insurance. The death certificates of policy holders are presumably reliable, owing to the greater accuracy required in making these returns. Hence the mortality statistics of such companies as insure women ought to throw some light upon the frequency of puerperal septicemia. The social class of women who are insured is a wide one, including persons not only from the upper and middle strata of life, whose financial interests are more or less considerable, but also members of the working class, among whom an increasing number desire insurance solely to provide for the expense of their last illness and burial. Since the lives of these women are of greater monetary value, to the extent indicated by the mere fact of being insured, than those of the uninsured, therefore the former would be more likely than the latter to protect themselves from the risks

of confinement by employing at that time professional rather than untrained assistance. For this and other evident reasons puerperal septicemia ought to be less frequent among insured than uninsured women. In reply to a letter addressed to the medical director of one of the leading American life insurance companies, asking the question: "Have you any statistics bearing directly or indirectly upon the frequency of deaths (among your policy holders) due to sepsis received during childbirth, and stated in your death certificates as "childbed fever," "puerperal fever," etc., I am permitted to use the following:

"You will doubtless be surprised to learn that our mortality from this cause is *nil*. We have a record of one death from exhaustion following labor, complicated with an abdominal tumor, but there have been no deaths from other causes in connection with pregnancy. I do not pretend to say that these statistics afford very valuable criteria for judgment. Several reasons may be advanced in explanation of our mortality figures:

(1) Pregnant women have always been excluded by this company.

(2) For many years female risks were not accepted by this company unless they had passed the climacteric.

(3) It is only within the past few years that we have issued to women with any degree of freedom, and practically without restriction or extra premium. Consequently, the volume of this class of business exposed on our books has not been great.

(4) We have always closely scrutinized applications from females as regards the moral hazard, possible speculative interest, lack of insurable interest on the part of the beneficiary, etc.

From researches we have made we hold the view that with proper precautions women may be accepted without fear of any decided extra mortality as compared with men, the hazards of childbirth being equalized by the greater moral hazard in the average male subject, and mortality from syphilis, intemperance, etc.—conditions less likely to be present in female applicants than male.

The above rule does not hold good, in our opinion, when women who are pregnant at the time of application are accepted, as under such circumstances there is usually a strong selection against the company, and the insurance is frequently sought simply to cover the temporary hazard of pregnancy, and terminates after that hazard ceases." (Personal letter.)

In reply to a question as to the frequency of puerperal septicemia among their insured the medical director of another life

insurance company wrote me as follows: "I am sorry to say that we have nothing in this office that will help you. Our experience with women has been comparatively small, in spite of the large amount of business done by the company, for the reason that during the greater part of the time the writing of risks among women was discouraged; moreover, in so small an amount of business the number of cases of puerperal septicemia either among our death losses or in the history of the applicants would be so small as to be practically valueless."

4. In using private records for statistical purposes one must remember that the habit of recording cases by the general practitioner is so unusual that their very infrequency decreases their scientific value. Even the few physicians who are habituated to note-taking record only unusual cases from which generalization is manifestly impossible. Besides private notes are confidential communications with one's self—acknowledgments of mistakes as well as congratulations for successes,—and therefore would be jealously guarded from public inspection. This source of statistics must then be relatively small, while their scientific value must be lessened by the personal equation of the reporter and the exceptional character of the cases.

5. Extempore verbal reports of private practice have so many points of inherent weakness, that they must have little statistical worth when compared with orderly written articles. Few men can sit in judgment upon the practice of a brother physician impartially, or without arousing suspicion as to their motive. For instance, the author is personally aware of three cases of puerperal infection, each of which was attended by the same physician. One of the women died on the sixth day post partum, one recovered after a capital abdominal operation, and the other after a severe illness. Each patient was cared for by a separate nurse. Whether the source of infection was the physician, the nurse, or both in common, is uncertain, but the fact that the physician alone was associated with all of the cases, but each nurse with only a single one is circumstantial evidence against him. Proof that the disease was actually septicemia rests entirely upon the clinical history. In using such a report for statistical purposes so many of its details are conditional that the whole has little more value than hearsay evidence. It is worth its face value, and no more.

Throughout this paper the words "asepsis" and "antisepsis" have been used interchangeably. The Century Dictionary defin--

the words thus: "Asepsis, absence of living germs of disease, putrefaction, or fermentation. Antisepsis, the more or less complete exclusion of living microorganisms from those bodies or substances in which they produce disease, putrefaction, or fermentation." While according to this authority asepsis means the *fact* and antisepsis the *result*, it is no wresting of either word from its proper sense to use them as synonyms, and they are at present thus used very largely by the profession.

This paper was begun in the hope that it might be possible to give a favorable answer to the question: How does puerperal septicæmia in private practice to-day compare in frequency with the disease under similar conditions a generation ago? Judging from the statistics at hand, whose general trend has been indicated, it does not seem possible that the question can be answered. It demands more extended research than the author can give to the subject. This much, however, may be said with fairness; for theoretical and practical reasons it appears, that the nearer the obstetrician is to his graduation the better is his technic and the cleaner is his record. After all, the question is of less importance than the greater one: What prospect is there that puerperal infection will ever be put an end to? It would appear that the answer must depend in great measure upon the character of the professional training, which the coming generation of obstetricians will receive both at the school and bedside. Judging from present conditions it is not to be expected that general practitioners of to-day will vary much from their present habits and prejudices, or that the ordinary midwife will ever do clean work. It has been demonstrated without question that the hazard of infection has been eliminated from public midwifery. The most important problem of obstetrics to-day is: How can the protective method of delivery, as illustrated in the maternity, be made obligatory in private practice? Its solution depends upon the scholastic training of the future. By the teaching of the universal principles of asepsis in the school, and by observation of its practical application in the clinic, the student will enter upon active practice so firmly confident in the protective method of delivery that he will have neither inducement nor wish to use any other. The future midwife will be controlled by legislation, and required to fit herself for her duty by systematic study, just as is now the custom in Europe. To reach this great desideratum, universal asepsis in midwifery, the profession of to-day should preach and practice.

REFERENCES.

- Cazeaux' Midwifery, 1873.
 Lusk's Midwifery, 1884.
 Galabin's Midwifery, 1886.
 Parvin's Obstetrics, 1890.
 Edgar's Obstetrics, 1903.
 Williams' Obstetrics, 1903.
 Eleventh Annual Report Upon Births, Marriages, and Deaths, Maine, 1902.
 The International System of Classification of the Causes of Death. (Bertillon Classification.)
 Report of City Clerk, Portland, Maine, 1902, 1903.
 Report of Mothers and Babies Hospital, N. Y., 1900.
 Report of Boston Lying-in Hospital, 1900.
 Paper by Norereis, AMERICAN JOURNAL OF OBSTETRICS.
 AMERICAN JOURNAL OF OBSTETRICS, June and July, 1904.
New York Medical Journal, July 2, 1904.
New York Medical Journal, July 23, 1904.
 Milroy Lectures, *Lancet*, June 25, 1904.
 Milroy Lectures, *Lancet*, July 2, 1904.
 Paper by Horrocks, *Lancet*, 1904.
 Paper by Berry Hart, *British Journal of Obstetrics and Gynecology*, Vol. I, No. 1.
 Personal Letter from the Medical Director of the Provident Savings Life Assurance Society.
 Personal Letter from the Medical Director of the New York Life.
- £ 159 HIGH STREET.

CESAREAN SECTION FOR DYSTOCIA FOLLOWING MYOMETOMY.

BY

J. C. HUBBARD

Physician to Out Patients, Boston Lying-In Hospital; Third Assistant Surgeon, Boston City Hospital.

Boston, Mass.

IN September, 1903, I saw, with Dr. P. P. Denny, of Brookline, Mrs. H., 29 years of age, who was in labor with her first pregnancy.

In 1901 she had been operated upon at St. Elizabeth's Hospital. For the details of this operation I am indebted to one of the members of the staff. The uterus, $3\frac{3}{4}$ inches in depth, was down in the pelvis and anteфлекed. Curetting brought away a large amount of soft tissue, but the cavity of the uterus was smooth and not encroached upon by any nodules. On opening the abdomen both tubes and ovaries were found to be normal. A large corpus hemorrhagicum was shelled out of the left ovary. Two fibroids, measuring 2.5 by 1.2 and 1.8 by 1.3 c.m., were enucleated from the anterior face of the uterus and their beds closed with catgut

sutures. The uterus was fastened forward by two strands of kangaroo tendon through the peritoneum, muscle and fascia of the abdominal wall. During the convalescence a mural abscess developed and reached down to the wounds in the anterior face of the uterus.

When seen by Dr. Denny and myself in 1903 the membranes had ruptured two days previous, but labor pains had not begun till some time later. On palpation the breech of the fetus was felt low down in the right iliac fossa and the head under the edge of the ribs on the left. On vaginal examination the os was found some distance to the left of the median line, the axis of the uterus lying almost transverse. The head was really the presenting part, although almost under the ribs. Under ether it was impossible to apply forceps, as the os lay so far to the left that the blades could not be made to reach the head. With much difficulty, because of the deviation of the uterus, a foot was caught and internal podalic version performed. As the baby had to make an abnormal turn in its passage from the uterus it was delivered only after hard pulling and by breaking an arm and leg.

The heart was beating, but the baby could not be resuscitated and soon died. As the uterus contracted after delivery a small fibroid was felt to the right of the fundus.

The patient soon became pregnant for the second time, and had her last menstruation on March 2, 1904. Not only the apparent impossibility of ever delivering a living baby through the vagina, but the great risks of serious injury to the mother from such difficult extraction led us to determine to deliver the second baby by Cesarean section. Accordingly the patient entered the Boston Lying-In Hospital a few days before the date of her confinement.

Measurement of the pelvis gave the following result: Spines, $10\frac{1}{4}$; crests, $11\frac{1}{4}$, and the external conjugate $8\frac{1}{4}$ inches.

By palpation the position of the fetus was the same as at the first confinement, the breech being in the right iliac fossa and the head under the ribs on the left. By vaginal examination the os lay so far to the left that the examining finger was only just able to reach its lower edge, but not to enter it. On Dec. 7 a Cesarean section was performed. The abdomen was opened by an eight-inch incision. A few adhesions between the omentum and the abdominal wall were broken up and the uterus delivered. It was packed about with towels and incised. The placenta, which lay in front, could not be avoided and the baby was delivered through it. The placenta and membranes were then delivered and a finger

forced through the os to ensure drainage by the vagina. The incision in the uterus was closed by deep sutures of silk through all its layers except the internal and by superficial stitches. The uterus was then wiped off with salt solution and dropped back into the abdominal cavity and the abdominal wall closed with silk worm gut. On the anterior surface of the uterus was a slight depression and a scar, evidences of the previous myomectomy, and at the right cornu a small subserous fibroid. The mother and baby made an uneventful convalescence. About four weeks after the operation examination of the mother showed a cicatrix on the left of the vagina running to the cervix. The cervix with a stellate tear lay in the middle line. The uterus had involuted normally and was movable. Its fundus lay about $1\frac{1}{2}$ inches to the right of the median line.

The tears, of course, date from the first confinement. The relation of the cervix and uterus to the pelvis is the point of especial interest.

The rarity of Cesarean section for such cause as in this case is shown by the fact that dystocia from ventral fixation of the uterus or myomectomy is not mentioned in books on gynecology by such men as Dudley, Garrigues, Keating and Coe, Kelly, Montgomery, Pozzi and Williams, or in obstetrics by Hirst, Jewett, Lusk and Reynolds and Newell. Not one of the 46 women who have been delivered at the Boston Lying-In Hospital by a Cesarean section has been operated on because of dystocia from this cause. In an article by Haven and Young (*AM. JOURNAL OBSTET. AND DISEASES OF CHILDREN*, Vol. XLVII, No. 4, 1903), a list is given of Cesarean sections. In 28 of the cases where the cause of the dystocia is given there is not one due to a previous fixation or myomectomy. Thus in a series of 74 Cæsarean sections this case has no duplicate.

The opinion prevails generally that difficult labors follow ventral fixation in a very small percentage of cases. I have, however, never heard in discussions on myomectomy any reference made to dystocia in later pregnancies as a result of this operation. The fact that in this case no adhesions existed between the uterus and the abdominal wall, to obtain which the fixation operation had been performed, seems to lay the burden of the dystocia upon the myomectomy. The scar of this operation prevented the even expansion of the uterus, as its size grew with the advancing pregnancy. The cicatrix in the uterus lay on the right. As this fibrous tissue could not stretch as readily as the uterine muscle

this portion of the uterus remained a more or less fixed point, and as the uterus grew it naturally turned on this point, so that its axis lay transverse, the os being on the left and the fundus on the right. The proof of the correctness of this explanation is shown by the return of the uterus at four weeks after the delivery, so far to its normal position that the fundus lay only a little to the right and the external os in the middle line. Doubtless as involution becomes more complete the axis of the uterus will coincide more closely with the median line.

The fact that a small percentage of myomectomies are followed by difficult labors is no argument against the operation. The only alternative to the myomectomy would be a hysterectomy. A myomectomized uterus is to be preferred under all circumstances to none at all.

84 BAY STATE ROAD.

INDICATIONS FOR CESAREAN SECTION: REPORT OF TWO CASES; RECOVERY.*

BY

JOHN F. MORAN, M.D.,

Professor of Obstetrics, Medical Department, Georgetown University; Obstetrician
to Columbia and Georgetown University Hospitals, Washington, D. C.

THE evolution of Cesarean section serves to demonstrate the rapid progress of modern surgery. Known and practiced from early centuries, the operation languished, owing to its frightful mortality, and in 1777, when Sigault proposed the operation of symphyseotomy as an alternative, this, together with the then almost universal adoption of embryotomy, led to its almost complete abandonment. Since the advent of the antiseptic era, however, the former death rate of 50-90 per cent. has gradually declined, so that at the present time, in the hands of experienced operators, it is below 5 per cent. In a table compiled by Williams of 162 cases, there were five deaths, or 3.8 per cent., and among the profession at large 10-20 per cent. has been reached. While antiseptic surgery has been the most important factor in this advancement, it should not be forgotten that it is also during this period that improved technique, as advocated by Porro (1876) and Säger (1882) has taken place, and, together with more definite appreciation of its indications and limitations, have greatly contributed to this excellent showing.

* Read before the Washington Obstetrical and Gynecological Society,
vember 4, 1904.

That marked degrees of kyphosis, pelves with conjugate vera of 5.5 c.m., large tumors of the lower segment of the uterus, exostosis of the pelvis, atresia of the vagina, ventro-fixation, etc., are absolute indications hardly admits of dispute; but as regards the relative indications as to whether the case cannot be otherwise delivered by induction of premature labor, symphyseotomy, craniotomy, forceps or version, there is a wide difference of opinion.

The induction of premature labor, though offering little danger to the mother, is opposed on the grounds of high fetal mortality. Norris (*AM. J. OBSTRET.*, Sept., 1904), however, in a recent article, combats this assertion, and supports his contention with the report of thirty cases delivered by this means, ranging from 36 weeks to term, in pelves with conjugate between eight and ten c.m., in which there was no maternal mortality or morbidity, and in which 23 of the children survived. He says that while cases selected for Cesarean section with a conjugate below 8 c.m. will have favorable outcome for both mother and child, his experience shows that those with a conjugate over 8 c.m., if performed at the proper period, should be saved by the induction of premature labor. He admits, however, that it is not an easy matter to determine the time for intervention, and that the widest experience and most painstaking study and keenest mechanical sense are requisite for the successful issue of this operation. He does not, therefore, agree with Williams, Reynolds and others, who elect to permit such cases to proceed to term, and, if necessary, to perform Cesarean section to effect the delivery.

Symphyseotomy has its strong supporters as an operation for the minor degrees of the contraction of the pelvis, the minimum conjugate being 7 c.m. Yet in a clean case I should elect to perform Cesarean section in preference, for the reason that in symphyseotomy there is danger of wound infection from the vulva, laceration of the urethra and vagina besides; in the former the mortality should not be greater, while in the latter the morbidity is almost certain to be increased. There is, however, a field for this operation in cases that have been some time in labor, frequently examined, possibly infected, also in impacted face and occipito posterior cases.

Craniotomy no longer holds the prominent position it formerly occupied, and justly so, because the child has inherent rights which should be considered, even at the expense of an increased risk to the mother. Besides, the statistics of craniotomy, as re-

ported by Pinard in 81 cases, show a mortality of 11.5 per cent., although some of the deaths were due to trauma and sepsis.

Halbertsma (1878) recommended Cesarean section for eclampsia, and Hillman has reported 39 cases, with a maternal mortality of 51.3 per cent. and fetal mortality of 43.9 per cent. These figures are certainly not more favorable than by other methods of operation for the relief of this complication, and hence have met with little support. On the other hand, vaginal Cesarean section, as proposed by Dührssen (1896), has yielded excellent results, and in primiparæ is far preferable to the forcible dilatation of the cervix.

I recently collected 24 cases of Cesarean section performed for placenta præviæ by twenty-one operators. Fourteen were operated upon according to the Säger method, seven after the Porro method, and three by methods not stated. The majority of these cases were emergencies, and were operated upon after other methods had failed. Maternal mortality was 20.8 per cent., fetal mortality 54.3 per cent. Eight of these cases were operated upon before viability, or were dead before extraction, and five died from various causes in from several hours to four days after delivery. There is a field for the operations, particularly in primiparæ with small agina and rigid os and central implantation of the placenta, but its success will depend upon early recognition and prompt interference while the patient is in good condition.

After all, the most frequent and important indication for Cesarean section is in contracted pelvis where there is present an insuperable barrier to the natural termination of labor. Williams contends, as it is impossible for spontaneous delivery of an ordinary full term child to take place in the pelvis of 7 c.m., that the absolute indication for Cesarean section should be extended to that point, provided the patient is in good condition and surroundings favorable for a major operation. He further advocates that in appropriate cases the relative indications also be broadened, and its upper limit placed at a conjugate vera of 8.5 in flat pelvis, and 9 c.m. in generally contracted pelvis. The procedure will depend upon the size and consistency of the head and character of uterine contractions. Given two women with pelvis of the same size, one will have a spontaneous and easy labor, and the other will require Cesarean section. In such case the operation is undertaken in the interests of the child, in preference to resorting to forceps, version or craniotomy. If the head fails to engage in an hour after the completion of the first stage, and the patient is in good condition,

Cesarean section is indicated. He contends that by it nearly all of the children will be saved and quite as many mothers as after a difficult high forceps operation or version or craniotomy. If favorable conditions, however, do not obtain, the patient should be allowed to proceed in labor and the delivery accomplished according to the exigencies of the case. My own experience and observation is that this is a step in the right direction, particularly in hospital cases. To my mind, the danger after Cesarean selection in selected, clean cases, is less than the traumatism and risk of subsequent infection following forceps and version. How often we see cases delivered by the latter methods in which the child is sacrificed at birth, or dies within a few days afterwards of intracranial hemorrhage. It is with the border line cases with which we have so much difficulty, and they require the most exacting care in deciding how best to act in the interest of both lives. The great mistake many make is to apply forceps in cephalic presentations, regardless of position and whether the head is engaged in the brim or not. The cardinal rule is, that forceps should never be applied to a head that has failed to enter the brim of the pelvis, for in a very large percentage of cases disaster will be almost sure to follow. I do not wish to be understood as in any way underestimating the value of forceps, version, and the induction of premature labor in contraction of the pelvis, as they have their field of usefulness, nor am I unmindful of the fact that the majority of cases would deliver themselves unaided, but what I do advocate is that more attention be given to the patient during the period of pregnancy, and that at the appropriate time a careful and thorough examination be made, so as to be prepared to intervene at the proper time and moment in the interests of both mother and child.

I report two following cases operated upon by me at the Columbia Hospital.

M. H., age 27, colored, primipara, was taken in labor April 27, 1903. Seen about eighteen hours afterwards, and had been having strong, regular pains, but making no progress. Examination showed the cervix incompletely dilated, head not engaged, and bag of waters intact. Conjugate vera $3\frac{1}{4}$ inches, between spine $8\frac{1}{4}$ inches, crest $9\frac{1}{4}$ inches, external conjugate $6\frac{1}{2}$ inches. After consultation with Dr. Sprigg of the visiting staff it was decided to perform Cesarean section. Patient was removed to the operating room and operation was performed after the Sanger method. The child was extracted somewhat cyanosed, but, under the care of Dr. Sprigg, soon revived. Time of operation was thirty-five

minutes. Mother made uninterrupted recovery and left hospital with her child June 1.

CASE II.—M. B., age 28, white, Irish, primipara. Patient seen in consultation with Dr. Reisinger. Labor began May 20, 1904, about 3 p. m.; pains were strong and regular throughout evening and night, and water was ruptured some time during the early morning. I saw the case about 9 a. m. on the 21st. The forceps were applied and tentative traction made, but it was found impossible to bring the head into the brim of the pelvis. Upon careful examination the anterior-posterior diameter was found to be $3\frac{1}{2}$ inches in length. I therefore advised that the patient be removed to the hospital for operation. In the interests of the child, I determined to perform a Cesarean section, although appreciating there was an added risk in so doing on account of the protracted labor. The usual uterine median incision was made and the placenta found attached to the anterior wall. This was separated from one side and the child quickly extracted. On account of the prolonged labor every precaution was taken to combat suspected inertia. No sooner was the child delivered than the uterus collapsed like an empty bag and blood poured from the uterine sinuses. Manual irritation and abundance of salt solution, and subsequent packing with iodoform gauze finally brought about contraction of the organ and control of the hemorrhage. The wound was closed in the usual manner and the patient reacted well. Unfortunately the case proved to be infected with the colon bacillus and staphylococcus aureus. Patient had a long and tedious illness extending over some weeks, but through the unremitting care of the internes and nurses she recovered, and left the hospital with the infant July 16th.

2426 PENNSYLVANIA AVENUE, N. W.

THEORIES OF ECLAMPSIA.*

BY

JOSEPH B. DE LEE, M.D.,

CHICAGO.

THE gentleman who arranged this symposium on eclampsia asked me to introduce the subject of the causation. I accepted the invitation with a good deal of reluctance, because the time was short, and I wanted to pick out the salient points of the views and theories held by different men in regard to the subject under consideration. In the ten minutes allotted to me I can only briefly present these various views.

You all know the trite expression of Zweifel, that eclampsia is the disease of theories. That I have had more and more proved to me as I waded through the oceans of literature on the causation of eclampsia. As a matter of fact, we know practically nothing of the causation of eclampsia. A theory has only to be set up by one investigator to be knocked down by another, and since there are a large number of theories advanced, we must give both sets of workers credit for the immense amount of labor and time consumed in building up these theories and in knocking them down.

In 1839, Rayer,¹ and in 1843, Lever² (England) found albumin in the urine of eclamptics, which was confirmed by Devilliers and Regnault. In 1853 Frerichs declared that eclampsia was a uremia, the result of decomposition of urea in the blood, and that this decomposition resulted in carbonate of ammonia, the convulsions being elicited by this drug. Traube, Munk and Rosenstein³ believed that eclampsia is due to hydremia and increased blood pressure in the aorta due to cardiac hypertrophy. This theory was disproved by Bidder.⁴ Spiegelberg⁵ said that sudden cessation of the kidney action was caused by inflammation of the kidneys, or by a reflex similar to the anuria that occurs in cases of catheterization of the urethra and ureters. This theory has not borne the brunt of investigation. Schroeder and Leyden⁶ showed that eclampsia is rare in chronic nephritis, but that it is common in acute nephritis. Lantos⁷ found albuminuria in 91 per cent. of eclamptics. Ingerslev⁸ collected 106 cases without albuminuria or disease of the kidneys. Charpentier⁹ collected 141 such cases.

* Read before the Chicago Gynecological Society, December 16, 1904.

Prutz¹⁰ found the kidney findings in cases of eclampsia had no relation to the severity of the attacks.

Halbertsma¹¹ has advanced the theory of eclampsia being due to compression of the ureters, but post-mortem examinations have disproved it. Of 32 post-mortem examinations made by Loehlein, in eight there was dilatation of the ureters. In 37 post-mortem examinations made by Olshausen, there was dilatation of the ureters in seven cases. In 103 non-eclamptic cases, post-mortem examinations showed that in twelve there was unilateral compression of the ureters, and in four bilateral dilatation.¹²

In a case I attended at the Cook County Hospital, eight months pregnant, in which accidental death occurred, post-mortem revealed dilatation of the ureters.

A pregnant woman's nervous system is more sensitive to external irritations, resembling in this respect the condition of children. The exaggerated effects of poisons, of hydremia, etc., may thus be explained. Von Herff¹³ believed that a summation of external irritants was necessary to evoke convulsions in women so predisposed.

Nothnagel declared eclampsia an acute epilepsy. Ferè¹⁴ described cases of epilepsy arising as a result of eclampsia. The writer has a case of epilepsy that came on after eclampsia. Epilepsy in some cases is due to toxemia.

Delore,¹⁵ in 1884, suggested that bacteria might be the cause of eclampsia. Doleris, Blanc,¹⁶ Favre,¹⁷ tried to prove it. Gerdes¹⁸ found a bacillus, which he named bacillus eclampsia, but Hofmeister¹⁹ and Hägler proved it to be proteus vulgaris. The writer's bacterial studies of eclamptics' placentæ were negative. The tubes remained sterile. Gley found the staphylococcus aureus and albus; and Prutz²⁰ found a short, thick bacillus. Schäffer found that various germs injected into animals caused convulsions. Schmorl, l.c., Döderlein, Chambrelent,²¹ Blanc, Loehlein and others could not prove the microbic origin of the disease. Hofmeister and Hägler proved that several varieties of germs are found in the blood and urine.

Stroganov²² states that eclampsia is an acute infectious disease introduced through the lungs, and he believes in giving these patients plenty of fresh air and medical treatment.

Albert²³ believes that eclampsia is due to a latent or active microbic decidual endometritis. Mueller²⁴ agrees with Albert, and says that eclampsia is due to intoxication originating from the parturient canal.

In 1887 the auto-intoxication theory was advanced by Bouchard,²⁵ which opened up a new field for investigation, and Bouchard tried to prove that eclampsia is an intoxication from impaired action of various excretory organs. Riviere,²⁶ a pupil of Bouchard, said that (1) pregnancy was attended with an overproduction of toxins; (2) that there was hyperemia of the kidney and liver, with poor elimination; (3) that poisons damaged the kidneys.

In 1890 Laulanié and Chambrelent²⁷ proved that the blood of pregnant women had in it circulating toxins, and the urine less of them. Ludvig and Savor²⁸ confirmed the above theories, and sought to prove that the poison is carbamic acid.

Vollard²⁹ disproved all the above theories. He showed a coagulating ferment in the blood in two cases. Schuhmacher³⁰ and Stewart³¹ also dethroned all these theories, proving that the toxicity of the urines of normal, nephritic, and eclamptic women was the same if the specific gravity was the same.

Zangenmeister³² found that the excretion of ammonia and urine water were parallel, that the two diminish during labor. Eclamptic urine has a low per cent. of ammonia. From this the deduction is drawn that the eclamptic kidney retains some salts and lets others through.

Pinard, and Bouffe de Saint-Blaise³³ set up the theory of hepato-toxemia, that the toxemia is the result of deficient liver action. This insufficiency of the liver is due to heredity (Pinard), anterior disease of the organ, acute infectious disease, no matter how mild, and intestinal affections.

Turenne³⁴ believes many of the milder symptoms of toxemia, vomiting, pruritus, etc., of early pregnancy are due to a menorrhemia, that substances which are ordinarily excreted during menstruation now accumulate in the blood. Reasoning from the analogy of the use of ovarin in the treatment of the symptoms of amenorrhea (menopause), Turenne prescribed ovarin for these pregnancy disturbances, and says he always succeeded in curing them.

Planchu³⁵ reviews the auto-intoxication theory, and says the toxemia is due to the liver, and that the following conditions in pregnancy may be ascribed to it: Nausea, insomnia, somnolence, ocular troubles, neuritis, vertigo, headaches, pruritus, etc. Severer symptoms are vomiting, general pruritus, ptialism, edema without albuminuria, herpes gestationis, puerperal mania, finally pernicious vomiting, albuminuria, and eclampsia.

Juergens,³⁶ in 1886, found constant changes in the liver and liver cell emboli. Klebs³⁷ confirmed these observations. Pilliet³⁸ found necrotic foci in the liver, in addition, and Schmorl³⁹ found necrotic hemorrhagic and anemic foci in the liver, thrombosis of the portal vein and small veins of the periportal circulation. Schmorl's work, by the way, is classic, and one of the milestones in this history that promises to be permanent. Schmorl found in the kidneys anemic infarcts, in the lungs hemorrhages, and exudations in the alveoli, as well as small hemorrhages in the brain. He also found thromboses and areas of softening in the heart. There were emboli and liver cells, and of giant cells (syncytium) from the placenta in the lungs. Schmorl believed the cause of eclampsia would be found in the placenta, that a substance of the nature of fibrin ferment, the result of degenerative processes or metabolic changes going on in the placenta, circulated in the blood and caused the thrombosis and emboli. Jung,⁴⁰ Pels-Leusden,⁴¹ Limfors,⁴² Lubarsch⁴³ support these findings, while Dienst,⁴⁴ Fehling,⁴⁵ Schuchard say they are not constant. Schmorl at first thought a special pathologic syndrome could be asserted for eclampsia, but his later researches showed the findings in a large majority, but not in all women dying from convulsions.⁴⁶

J. Veit⁴⁷ and Opitz⁴⁸ are working on a syncytial theory of eclampsia. Schmorl and others have proved the deportation of villi by the blood. Veit and Opitz believe that the syncytium is dissolved in the maternal blood, producing syncytiotoxin, which is held responsible for many of the disorders of pregnancy. Normally, the blood produces anti-bodies, in this case an anti-syncytiotoxin, a precipitine. In eclampsia there is a lack of this anti-syncytiotoxin. By triturating the placenta with sand, Opitz and Weichart obtained a filtrate which they injected in increasing doses into goats. The serum of these immunized goats they tried on themselves, with only local reaction. In eclamptic patients the serum had no effect.

Lange⁴⁹ studied the relation of the thyroid to albuminuria and eclampsia. He found that physiologically goitre was present in 60 per cent. of gravidæ, and 100 per cent. of puerperæ. He found that the kidney of pregnancy did not develop if the thyroid gland was enlarged, that if there was albuminuria iodothylin would usually cause its disappearance. He found that animals from whom he removed part of the thyroid developed tetany, and some of them convulsions.

Nicholson⁵⁰ found the thyroid hypertrophied in 81 per cent. of

cases examined, and he also notes the good effects of iodothyrim in the cases of "kidney of pregnancy." No one has yet tried to prove that the para-thyroids have anything to do with toxemia, eclampsia, and allied conditions, nor have the adrenals been incriminated. The high arterial pressure present so often in eclamptics should have led investigators to suspect the adrenal glands.

Cryoscopy is being used to determine the osmotic pressure in the maternal and fetal blood, and in the urine, with a view of discovering the permeability of the kidney. The ultra-microscope has been used for the same purpose by Jankov.⁵¹ Nothing of value has as yet been obtained.

Finally, eclampsia is supposed to take its origin in the child. Ahlfeld,⁵² in 1894, expressed the opinion that the toxin was formed in the child or the fetal placenta. Fehling,⁵³ Kollman,⁵⁴ and others have supported this theory. Since the convulsions often cease after the child dies, or is delivered; since they are more common in twin pregnancies; since pathologic changes similar to those of the mother are found in the fetus, some color is given the theory. Baron et Castaigne⁵⁵ have proven that substances are absorbed from the child into the mother.

There is much to be said against this theory. Indeed, out of the entire presentation only one point seems to be generally conceded, namely, that eclampsia is due to the action of a toxin in the blood upon the nerve centers. How and where the toxin is formed are unknown.

BIBLIOGRAPHY.

1. Rayer: *Traité des mal. des reins.*, Paris, 1839.
2. Lever: *Guy's Hosp. Reports*, April, 1843. Remarks on Several Cases of Puerperal Convulsions.
3. Rosenstein: *Path. u. Ther. d. Nierenk.*, Berlin, 1863.
4. Bidder: *Arch. f. Gyn.*, XLIV, S. 173.
5. Spiegelberg: *Arch. f. Gyn.*, I, S. 385.
6. Leyden: *Zeitsch. f. Klin. Med.*, Band II, H. 1, and Band XI, H. 1.
7. Lantos: *Arch. f. Gyn.*, Bd. XXXII, S. 390.
8. Ingerslev: *Bidrag. til Eclampsien*, etc. Copenhagen, 1879; also *Zeit. f. Geb. u. Gyn.*, Bd. VI, S. 171.
9. Charpentier: *Traité prat. d. Acc.*, 1883, I, 699.
10. Prutz: *Zeitsch. f. Geb. u. Gyn.*, XXIII, S. 46.
11. Halbertsma: *Münch. Med. Woch.*, 1887, Nr. 35, etc.
12. Quoted by Fraenkel: *Wiener Med. Woch.*, 1904, Nr. 28.
13. Von Herff: *Cent. f. Gyn.*, 1892, S. 230.
14. Ferè: *Cent. f. Gyn.*, 1901, S. 707.

15. Delore: Arch. de Tocologie, 1884, II, 921.
 16. Blanc: Arch. de Tocologie, 1889 et 1890.
 17. Favre: Virchow's Archiv, Bd. 127, S. 33.
 18. Gerdes: Cent. f. Gyn., 1892, Nr. 20.
 19. Hofmeister und Haegler: Cent. f. Gyn., 1892, Nr. 51.
 20. Prutz: Inaug. Diss., Koenigsberg, 1892.
 21. Chambrelen: Semaine Médicale, 1892, 1893.
 22. Stroganov: Cent. f. Gyn., 1901, S. 1309.
 23. Albert: Arch. f. Gyn., Bd. LXVI, S. 483.
 24. Mueller: Arch. f. Gyn., Bd. LXVI, S. 259.
 25. Bouchard: Leçons sur les Auto-intoxications, Paris, 1887.
 26. Rivière: Auto-intoxication eclamptique, Paris, 1888.
 27. Chambrelen: Arch. clin. de Bordeaux, 1894, p. 271.
 28. Ludvig and Savor: Monatssch. f. Geb. u. Gyn., 1895, Bd. I, S. 447.
 29. Vollhard: Monatssch. f. Geb. u. Gyn., Bd. V, S. 411.
 30. Schuhmacher: Hegar's Beit. z. Geb. u. Gyn., V, 257.
 31. Stewart: *Amer. Jour. Obst.*, 1901, p. 506.
 32. Zangenmeister: Hegar's Beit. z. Geb. u. Gyn.
 33. Bouffe de Saint-Blaise: Annales de Gyn., 1891, XXXV, 48; and Annales de Gyn., 1898, L, 342; also Dec., p. 432.
 34. Turenne: L'Obstétrique, Nov., 1904, p. 675.
 35. Planchu: *Gazettes des Hôpitaux*, No. 9, Janvier, 1904.
 36. Juergens: Berl. Klin. Woch., 1886, S. 519.
 37. Klebs: Ziegler's Beiträge, 1888, III, 1, 30.
 38. Pilliet: Nouv. Arch. de Obst. et Gyn., 1889, IV, 312.
 39. Schmorl: Path. Anat.: Untersuchungen über Puerp. Eclampsie, Leipzig, 1893; also Arch. f. Gyn., LXV, S. 504, etc.
 40. Jung: Inaug. Diss., Leipzig, 1894.
 41. Pels-Leusden: Virchow's Archiv, Bd. 142.
 42. Limfors: Nordisk-Archiv. Festch. f. Axel Key.
 43. Lubarsch: Ergebnisse der Allg. Pathologie und pathol. Anatomie, 1895.
 44. Dienst: Arch. f. Gyn., Bd. LXV, S. 423.
 45. Fehling: Die Path. u. Beh. der Eclampsie im Lichte der heutigen Anschauung, Leipzig, 1899.
 46. Schmorl: Münch. Med. Woch., 1901, S. 946.
 47. Veit: Deut. Med. Woch., No. 9, 152.
 48. Opitz u. Weichardt: Deut. Med. Woch., Aug., 1903.
 49. Lange: Zeitschr. f. Geb. u. Gyn., Nr. 40, H. 1.
 50. Nicholson: *Scottish Med. and Surg. Jour.*, Mch., 1903.
 51. Pankov: Cent. f. Gyn., Dec., 1904.
 52. Ahlfeld: Lehrbuch der Geb., III, Aufl., S. 235.
 53. Fehling: L.c., and Verh. der Deutsch. G. f. Gyn., 1901, S. 261.
 54. Kollman: Cent. f. Gyn., 1897, Nr. 13.
 55. Baron et Castaigne: Arch. de Medicine experim., 1898.
- Quoted by Planchu.

TREATMENT OF ECLAMPSIA.*

BY

CHARLES B. REED, M.D.,

CHICAGO, ILL.

AFTER being tossed about on the sea of uncertainty for many years, and frequently deceived by numerous false etiological beacon lights, the medical profession has finally reached the trade winds of uniformity in the care of the eclamptic.

This result, however, has been achieved in spite of the incertitude regarding the causation of the condition, and as long as this obscurity persists the treatment must necessarily follow those narrow empiric lines which experience shows to be best for mother and child.

The clinical course of treatment is now well defined, and is governed by certain established principles which will control until a greater knowledge requires their modification.

In taking the post-partum cases as a point of departure we secure a basis for the discussion upon which there is practically no divergence of opinion.

The relative frequency of attacks might be expressed in the form of a ratio such as post-partum: ante-partum—ante-partum: intra-partum.

The ante-partum cases thus occupying the position of a mean between the other two.

According to the series collected by Schroeder, Braun, Winckel, Geuer, Olshausen, Dührssen, Goldberg and Schreiber, the post-partum cases attain an average of 14%. This apparently high percentage would be received with more confidence if it were explicitly stated that the attacks first appeared after delivery. However, the one important factor in these cases is the absence of the fetus, which excludes all operative interference and restricts the treatment to mechanical and therapeutic measures.

While the non-operative treatment of eclampsia is essentially symptomatic under all circumstances, it is here the only possible management, and is comprised in two principles:

- (a) Control the convulsions.
- (b) Eliminate the toxines.

The general recognition of the necessity for the control of the

* Read before the Chicago Gynecological Society, December 16, 1904.

convulsions is variably expressed in the choice of means for attaining that end. Narcotization, however, is most generally satisfactory, and the agents of election are chloroform, morphine and chloral, with veratrum viride, as a non-narcotic, ranking second in importance and regarded by many as a specific.

Chloroform is undoubtedly the most reliable agent for the control of the convulsions, which it subdues promptly and efficiently.

Unfortunately its injurious effect on the cardiac and vascular systems and on the blood precludes its use for any extended period, and as eclampsia is a disease of hours and even days duration, chloroform must be restrictively classed as an emergency drug of great importance.

Morphia has had an era of great popularity since Veit emphasized its value in eclampsia. With no desire to underestimate its importance, there are certain objections to the employment of morphine, which, in my opinion, give it a secondary place; for instance, its restrictive effect upon the eliminative functions, the increased danger of death (from the drug) during the coma, and the apparent prolongation of the post eclamptic stupor, strongly tempt one to try another remedy.

Fortunately, chloral meets most of the indications as well as morphia, and is not exposed to the same objections. It controls the convulsions, and is far less toxic; it does not affect the secretions injuriously, and it can be continued for long periods.

Chloral in large doses is the most efficient and reliable agent in these cases. It lowers the pulse rate, reduces the temperature and lessens the blood pressure. The first dose should be 60 grs. given by rectum in mucilage or syrup, and repeated in four hours, or until the patient is thoroughly under its influence. Chloroform may be given until the chloralization is complete, and may be used subsequently at intervals to supplement its effects. This represents a popular and highly satisfactory method of controlling the convulsions, but this subject cannot be dismissed without reference to veratrum, which appears and disappears in literature and will not down.

Every writer talks about it, but no one seems to know anything definite about it, or relies upon it sufficiently to give it a fair trial.

In common justice this drug should be thoroughly investigated and its position systematically determined by a series of carefully observed cases.

In 1896 Parvin presented his paper on the use of veratrum to the International Congress of Gynecologists at Geneva and re-

ported 284 cases of eclampsia in which the drug had been used with a mortality of only 8%. Beginning his collection with indifference, he ended by becoming a convert, and no one can read his startling figures without feeling their great importance, and the profession cannot ignore this drug in the light of his report and feel blameless.

Theoretically and practically it seems to meet all the indications better than other measures. The pulse rate is diminished, the temperature is reduced, the cervix is relaxed, while diaphoresis and diuresis are promptly effected.

It is frequently stated that convulsions do not occur when the pulse goes below 60, and while this may be true generally, it is not always so.

It is now equally important to secure the elimination of the toxins which is accomplished by the stimulation of all the excretory organs. Catharsis by means of calomel, croton oil or saline with high colonic flushing is of prime importance.

Fluids by mouth and cupping over the kidneys will stimulate diuresis, which may be further increased by the use of glonoin if the arterial tension is low, and by normal saline per rectum and under the breasts.

Diaphoresis is obtained by the hot air bath, or the wet pack. The teeth should be protected by a cotton roller or some similar device. The statistics of post-partum eclampsia give a mortality varying from 7 to 10% under all forms of treatment.

We now have to consider the most frequent condition of all, namely, eclampsia intra-partum, which includes from 60% to 70% of all cases. The conditions are the same as before with the exception that we have an additional complication in the presence of the fetus. Whether the pathological entity of eclampsia resides in the mother or in the fetus, or whether a mutually antagonistic metabolism results in the convulsive seizures, the fact remains that the presence of the fetus is directly or indirectly responsible for a condition which involves a mortality of 25% of the mothers and 25% of the babes.

Theoretically, there would seem to be a definite indication to dissolve so injurious a partnership, and this view is powerfully supported by the fact that from 66% (Zweifel) to 93% (Dührsen) of convulsive seizures cease with the delivery of the child, and, further, by the great degree of safety which results from converting the case from one with 25% maternal mortality to one of 7%.

The natural forces greatly assist in these cases by an intensive activity. The pains become stronger and more effective, the cervix effaces quickly and the os dilates.

In harmony with what is apparently the natural method, and for reasons already stated, the opinion is practically unanimous that the labor should be accelerated.

We have then the two principles as before, namely:

- (a) Control the convulsions, and
- (b) Eliminate the toxins.

And to these we now add a third, which is "*to hasten the delivery.*"

The two first are executed in the manner and by the means already described, and where the labor is in progress or the cervix dilated or dilatable, the third principle is usually fulfilled by forceps or by version and extraction.

The results may be classified as follows:

- (1) Where the convulsions cease.
- (2) Where the convulsions diminish.
- (3) Where the attacks are not modified.

The case is now quite similar to the post-partum condition and should be treated by the methods previously given.

We now approach debatable ground, for on the treatment of the attacks occurring during pregnancy and before the beginning of labor there are many conflicting opinions.

The outlook is very bad: About 25 per cent. of all eclamptic seizures occur at this time, and of these the mortality varies from 30 to 46 per cent., and the fetal deaths run up to 69 per cent., according to Green.

Our two primary principles still stand unimpaired:

- (a) Control the convulsions.
- (b) Eliminate the toxins.

But the delivery of the child is a point of dispute.

It is urged by many that the injury, shock, and nervous irritation produced by a forcible dilatation of cervix and the delivery of the child makes the prognosis much worse. Then, too, it occasionally happens that after a few convulsions the patient recovers, throws off the toxins and goes to term.

Charpentier advises the control of the convulsions, the elimination of the toxins and delay until labor sets in, which usually is not long. Ahlfeld also advises expectancy.

The opposite school advises immediate interference. Zweifel finds a mortality of 28.5 per cent. under the expectant and 11.25

per cent. under the active treatment. The choice, which is largely temperamental, finds the majority of American physicians in favor of action.

Some delay is desirable, partly to determine the effect of the medication, and partly to give nature time to act on the cervix, but if the convulsions are violent, the intervals short, and medication inefficient, while the condition of mother and babe becomes more threatening, one should interfere quickly, actively and energetically. This is especially to be recommended if one can secure an aseptic environment. Charles, of Liège, following this plan, saved all the mothers and 75 per cent. of the babes.

Interference being assumed, some differences exist as to methods: The hard, unyielding and uneffaced cervix is the rock upon which opinions split.

The question is, how shall the interference be conducted to be safe, efficient and expeditious?

One group, headed by Olshausen and Kustner, find cesarean section advisable, but reserve it for those cases where the cervix is rigid, cartilaginous and not affected by the pains, and where the condition of the patient is becoming rapidly worse.

A second group recommend the immediate delivery of the woman in the quickest possible way, which they maintain is by vaginal cesarean section, according to Dührssen. Bumm especially advocated this procedure, and although presenting but a small number of cases he exhibits a mortality of only 8 per cent. Altogether this operation has been done sixty-one times, including the one reported by Bacon to this society, and its future is very hopeful. The technique of the procedure is simple.

A third group believe the delivery should be as rapid as possible without a major operation, that is, by the so-called bloodless method. By these, the cervix is first dilated by Hegar dilators, then the Barnes bag or the metreurynter is introduced and more or less traction exerted, according to the case, until dilatation is secured, when the labor is terminated by version or forceps. The objection to the rubber bag is the time required to secure results. A far better plan, when possible, is to dilate with the fingers, according to the Harris or Edgar methods.

The Bossi dilator has a definite position here which a more extensive use in future will determine.

A greater degree of success attends the mechanical dilatation of the os when the cervix is effaced; under this condition the method is comparatively harmless.

The discussion of bleeding, which has come into favor again recently, and the bleeding and saline treatment of Porak, and some other valuable measures, have been intentionally omitted, as well as renal decapsulation and lumbar puncture, which have not yet won a definite place in the treatment of eclampsia.

To recapitulate, then, it is the aim of treatment to

(1) *Control the convulsions.*

(a) By chloral in large dosage, supplemented by chloroform; or

(b) By morphine in large dosage, supplemented by chloroform; or

(c) By veratrum viride, supplemented by chloroform.

(2) *Eliminate the toxins.*

(a) By bowels—catharsis, colonic flushing.

(b) By kidneys—cupping, fluids by mouth, salines by rectum or under breasts and skin.

(c) By skin—hot pack or hot air.

(3) *Empty the uterus.*

(a) Cervix dilated—by forceps or version.

(b) Cervix closed—dilate by fingers or rubber bags, and deliver.

(c) Cervix rigid and cartilaginous—Dührssen incisions, vaginal cesarean section, or abdominal section, should be employed in the order named.

THE APPLICATION OF THE FORCEPS IN CONTRACTED PELVES.*

BY

ELMER SOTHORON, M.D.

Washington, D. C.

IN a paper on "Things We Should Remember in the Application of the Forceps," read before the Medical and Surgical Society of this city a short while ago, I endeavored to show that their powers were quite extensive, yet sufficiently limited; that their mode of action was that of a double lever with no small compressive powers, and that this power could not be successfully employed beyond a certain degree with safety to the child; that if more force were exerted, it would be at the expense of

* Read before the Washington Obstetrical and Gynecological Society, November 18, 1904.

the bones of the head and the brain of the child; therefore there was a limit to their usefulness.

It is with reference to their application in contracted pelves that I wish to call your attention, and if this contraction calls for operative procedure, I believe their use is justifiable in 80 per cent. of these cases in preference to symphyseotomy or Cesarean section. Fortunately, physicians agree that in the majority of these cases the interests of mother and child are almost identical. In a pelvis where the opening of the superior strait in its small diameter will give three and a quarter inches, forceps can be successfully employed, but when the diameter is less than three and a quarter inches, these instruments, I believe, cannot be used at the full period of utero-gestation with any chance of success. To be useful also requires that the head of the child shall be of moderate size and yielding, and a skillful hand should apply them. However, as they offer a better chance if properly applied than version, I believe they should be employed always in preference to this operation, even when a force that the unskilled might call great is required to make the head pass the superior strait, for the child will suffer less from gradual compression of the head than from the severe extension of its neck, which it must necessarily undergo when detained in a pelvis in which the small diameter is less than three and a quarter inches.

Lusk, in speaking of those cases where the pelvic contraction does not exceed the limits within which the delivery of a living child at term is at least possible, says: "In this category belongs the overwhelming majority of all instances of contracted pelves. It embraces not only cases in which the conjunction of every favorable condition is essential to delivery, but those of moderate degrees of narrowing, which are chiefly recognized through the influence they exert upon the mechanism of labor. It includes flattened pelves with a conjugate of over three inches, and just-minor pelves with a conjugate of over three and a third inches." Michaelis and Litzmann were the pioneer investigators of this subject, and their findings are the basis of modern opinion regarding contracted pelves; they place the limit at three and one-half inches for the simple flattened pelvis. In Germany, Litzmann, Michaelis, Spiegelburg, and Schroeder place the frequency of contracted pelves at 14 per cent., or nearly one in every seven cases. Ludwig and Savor, in 706 spontaneous labors in women with contracted pelves, had a child mortality of 9.4 per cent., and in 591 operative cases had 46.3 per cent. child mor-

tality, resorting mostly to craniotomy in the difficult cases. In 270 cases of contracted pelvis at John Hopkins Hospital, 71.58 per cent. of the children were delivered spontaneously, and the maternal mortality was .72 per cent., and the child mortality less than 4 per cent.

Barnes, in 1897, out of 38,065 cases of labor in London, found only 0.5 per cent. of contracted pelvis.

In this country, Reynolds, of Boston, in 1890, reported that he had observed 1.34 per cent. of contracted pelvis in 2,227 women delivered in that city.

Crossen, of St. Louis, reports a frequency of 8 per cent., and Williams of Baltimore of 13 per cent.; however, nearly two-thirds of Williams' cases were of the negro races.

We can safely estimate the frequency at nearly 8 per cent. in this country.

A great many writers claim that the forceps as a means of delivery before fixation of the head should be discarded, not because they cannot be employed with success, but because their use is extra hazardous. Their usefulness seems to depend upon the amount of fixation of the head at or in the brim of the pelvis. Lusk and others seem to make this the point of hesitancy. The question then is, how much engagement of the presenting part constitutes fixation. The word "fixation" is rather indefinite and does not give us a clear boundary line. If some writers mean by fixation that the presenting head down to the sub-occipito pregmatic diameter, or in flattened pelves the occipito frontal diameter, or in justo-minor pelves both parietal bones, must engage in the brim at the same time to justify the use of forceps in preference to symphyseotomy or Cesarean section, then I must confess I cannot agree with them. If the pelvic contraction is so slight that it allows such portion of the child's head to engage or fix itself within the brim of the pelvis, then even the application of the forceps is unnecessary, except to hasten the delivery and to rob nature of a slow, tedious victory. On the contrary, I believe the forceps, used with care and best regards for their real mechanical worth by an operator knowing the condition of the presenting part, as well as the canal through which it has to pass, can be applied successfully to the presenting head as soon as it shows its intention to mould and fix itself at the brim of the pelvis, and with a tendency to progress, the uterine conditions being favorable. We should recollect we are not forcing a solid presenting part through a canal with straight, rigid

walls, but one that can be subjected to considerable proper mechanical moulding, and that is being made to pass through a canal that is not entirely rigid. Indeed, I believe the aftercoming shoulders sometimes cause more obstruction than does the head with the aid of the forceps, and it would be well for us to remember the connection of the head of the child with its body, which we sometimes seem to forget during our anxiety to force the delivery of the head. Such procedure would cause the neck of the child to suffer from extension when the head is brought through the brim with the aid of forceps, and the shoulders, if large, fail to pass through the same without great resistance. A want of attention to this fact, I have every reason to believe, has caused deaths of children that have been charged directly to the use of forceps. Dr. Williams, in his excellent work on obstetrics, writing on methods of determining the size of the presenting head, and after mentioning Müller's method of impression, says: "On the other hand, the fact that the head cannot be forced into the superior strait does not necessarily indicate that spontaneous labor is out of the question, as we have no means of foretelling the extent to which moulding and configuration will occur at the time of labor." Again, this same author, writing upon "Use of Forceps in Contracted Pelves," says: "They are contraindicated when the head is freely movable above the superior strait after several hours of efficient second-stage pains, indicating that the disproportion between the head and pelvis is too great to be overcome. On the other hand, the application of the forceps after the head has become well moulded and is fixed at the pelvic brim is a justifiable procedure, provided brutal traction is not made," and also, "When the greatest circumference of the head has passed the superior strait, the employment of forceps is governed by the same rule as in normal pelves, for in such cases the operation is not performed on account of the contracted pelvis, but one of the usual conditions."

A variety of these cases which we sometimes meet with is that class in which the descending rami of the pubic bones are closely approximated, so that the sub-pubic arch forms an acute angle. I believe this class is not as uncommon as some writers claim. There are few physicians who have not met with cases in which the head has been arrested after it has descended into the true pelvis, this often being the first circumstance serving to direct his attention to the deformity. Should the defect in size be not

too great, the forceps will always prove to be a valuable aid, as the following case will illustrate:

Mrs. M., white, German, age 24, had been in labor nearly thirty-six hours with her first child. The early part of her labor had been slow, but regular. The midwife, to whose aid I was called, informed me in typical language, "That the patient had broke her bag, the womb was wide open, the pains were furious, the child hung low and was ready to come, but could not do so, for no sooner had her pains stopped than it flew back to its old place."

The patient was in good health and spirits, notwithstanding the length and severity of her suffering. She was short, waddled when she walked, and was very bow-legged. Upon examining her I found that the lower strait was defective in its small diameter, the ischial tuberosities approached too close, narrowing the pubic arch. The head was well situated, but could not descend low enough to enable the vertex to pass under the arch of the pubis. It was found rather mounted behind it and did not appear large. When a pain came on the parietal bones rode over each other and the scalp was pushed considerably in advance. I waited to try the influence of two or three pains, but the head advanced only during their action. So soon as they ceased it raised upwards, as it had done for a long time; the cause of the delay was plain, the parietal protuberances could not be forced by the uterus below the ischial tuberosities. Forceps were applied, and by merely maintaining the ground gained by each uterine effort without exerting much tractive force, I succeeded in delivering her of a living female child. The head was elongated to an unusual degree, recovering its normal shape in a few days. I have been compelled twice since to deliver this patient with forceps.

I wish to be understood as conceding their safety, not in the hands of all physicians, even in the most favorable of this class of cases, but only in the hands of those that are qualified by their professional attainments and the habit of using them. To the inexperienced physician they should be forbidden, not only because they may destroy the child, but also because the mother may be irreparably injured by their use. In the hands of the well qualified physician they are the most useful of all instruments. Their agency in preserving the life of the child as well as the mother in this class of cases is no longer problematical. Important, however, as the forceps are known to be by medical men, neither they, nor the skill which directs their use, is sufficiently appreciated by the public at large. Indeed, the practice of obstet-

rics is very far from being justly valued. This injustice to this branch of medical science arises mainly from the following causes :

First.—From the process of parturition being constantly viewed as an act in which the physician has no other concern than to silently watch operations of nature. This, I acknowledge, is strictly true in a great majority of cases, but in admitting this we are not to pass over without observation the exceptions or those instances which require both prompt and judicious interference, such as the class of cases I have invited your attention to this evening. But these are entirely lost sight of, and they are lost sight of in many instances because they cannot with propriety be made to meet the public eye, and this for reasons that will readily present themselves to a thinking mind, as well as the aversion every ingenious mind has to the appearance of vain boasting. Yet the skillful physician has it often in his power to congratulate himself that he has abridged severe suffering or preserved human life ; but neither expects nor can he receive any evidence of public approbation. This does not, however, arise from any reluctance on the part of the world to do him justice, but because the nature of his exertions and the indispensable application of his skill must for the most part remain unknown to everybody but himself.

Second.—The difficulties with which the physician has to contend are almost unknown out of his profession. On this account one of the most important operations which can possibly be performed, namely, the preservation of life by the use of the forceps in this class of cases, is put upon a par—nay, it is often placed below some of the most trifling operations of surgery, for the public are not aware that one of the most difficult operations is the proper application of the forceps, and one that requires some intelligence and high mechanical ability to do properly. How much greater praise do most of the operations of surgery obtain for the operator than a delivery by the forceps, yet I do not fear, nor do I hazard a contradiction when I say there is no operation in all surgery that should be appreciated more than the rational and just application of forceps in this class of cases.

Third.—The comparative estimate of the mother's and the child's lives contributes very much to lessen the value of manual interference in cases of difficult labor, for often when it is made known to the patient's family that it is absolutely necessary to use the forceps, they beseech you, whatever you do, to save the mother ; her life alone is taken into the calculation. The child

may be immolated without a sigh, and if it be preserved, it is looked upon rather as a piece of good fortune than as an evidence of any superior skill on the part of the physician. But I do not wish to be understood as charging the public with voluntary injustice on this subject; this is far from my meaning. I only wish to insist that the great difficulties oftentimes to be overcome by the physician in order to save life is altogether concealed from public view. Yet I feel it is proper that some delicate and proper effort should be made to elevate the character of the skillful obstetrician above the unskilled and pretending practitioner, and to have a just value set upon one of the most important life-saving operations in the whole range of medical science.

1921 I STREET, N. W.

FIBROMYOMATA OF THE UTERUS.*

BY

DUFF. G. LEWIS, M.D.

Washington, D. C.

I HAVE chosen a subject with which, doubtless, each and every one of you have a far better acquaintance and a more intimate knowledge than I; hence my hope that, though I offer nothing new, I may, at least, profit from your discussion.

My experience in efforts to remove fibroid tumors of the uterus has dispelled any preconceived ideas as to the ease and simplicity of the procedure, for in each case I have found conditions differing from others, which at times have taxed my utmost skill and patience to effect a successful removal of the tumor and the cure of the patient.

Macroscopically, fibromyomata are made up of a hard, homogeneous pearly-white tissue surrounded by a loosely attached capsule. Microscopically, they consist of fibers of unstriped muscle and connective tissue, in varying proportions. They are common, but are relatively more frequently found in the negro than in the white race.

These tumors are classified according to their relation to the uterine muscle. They may be subperitoneal, lying almost or entirely free from the uterine matrix, having the peritoneum for a covering and being more or less pedunculated. Those found sur-

*Read before the Washington Obstetrical and Gynecological Society Dec. 2, 1905.

rounded by uterine tissue are termed interstitial, and those springing from the inner surface of the uterus, lying under the mucosa, are the submucous. There is also a variety, the broad ligament fibroid, where the tumor springs from the lower uterine or cervical tissue, becomes detached and occupies the broad ligament.

The origin of these tumors is not as yet quite clear. As a rule, the tumor substance itself is poorly supplied with blood vessels; there is usually, however, a great hypertrophy of the circulation in the uterus and adnexa.

Fibromyoma of long standing are very prone to undergo degenerations, from which changes the health of the patient suffers and her life even may be jeopardized, unless a successful removal of the tumor is effected. The subperitoneal varieties may become twisted on their pedicles and become necrotic. The interstitial form may cause disastrous symptoms from pressure on ureter, bladder, or bowel, or from excessive loss of blood from the endometrium. The intrauterine polyps cause trouble from hemorrhage or sepsis. The broad ligament tumors make pressure on ureter and adjacent pelvic structures.

The causes of uterine fibroids are obscure, but menstrual activity exercises a powerful influence over their formation. They have been observed as early as the age of ten, but the decade from twenty-five to thirty-five is most prolific. They tend to degeneration, usually fatty and calcareous after the menopause, but are potent to prolong the period of menstrual activity some years beyond the usual date of cessation. This is due to their influence upon the endometrium, and to a possible effect upon the function of ovulation. Sterility and abortions seem to be predisposing causes for these growths.

The symptoms of fibromyoma may be grouped about the phenomena of pain, hemorrhage, hydorrhea, leucorrhea, abdominal enlargement, the pressure effects and the effects upon the circulation and general health. The discomfort suffered by these patients is not always in proportion to the size of the tumor, many small ones causing more annoyance than those attaining the proportions of the specimen here presented, which weighs seventeen pounds and a half. This tumor was removed post mortem from a woman ninety-six years of age.

I shall not go into a detailed account of these various symptoms, each variety of tumor presenting those peculiar to its class.

These tumors may be complicated with pregnancy, peritonitis, bowel obstruction, urinary disorders and abscesses.

| *The diagnosis* is made from a careful consideration of all the signs and symptoms. That some cases are much more readily diagnosed than others will be apparent when one considers the varieties and complications. The intrauterine polyps, when confined to the cavity of the uterus, are at times very puzzling; I have seen a uterus removed for a condition which was thought to be cancer of the body of that organ, but on examination after operation it was found that a small, hard fibroid on the interior of the uterus was accountable for the symptoms. From the standpoint of life the prognosis in this disease may not be considered in every case to be unfavorable; each case must be a law unto itself; the variety and complications should be thought of before an opinion is expressed; some conditions are grave, others may lead one to counsel nonintervention until more serious disturbances arise.

Treatment. (1) Palliative. By remedies to check and control hemorrhage and to relieve pain.

(2) My experience in the treatment of uterine fibroids has been purely surgical, and I have no reason to regret ever having removed a fibroid tumor. My patients so far (about eighteen in all) have all recovered and good results followed. I believe any patient is better off without a tumor than with one, hence I counsel surgical intervention whenever I find a uterine fibroid. It is my opinion that the cause of humanity is better subserved, and our duty to our patients better done, when we advise early removal of these tumors, than to resort to a palliative course, which will, in many cases, eventually necessitate a radical operation under adverse circumstances. I have selected a few cases from my record book to illustrate the varieties which have come under my care. I shall call your attention only to those features which make them distinctive and not burden you with details which are common to all such surgical cases.

CASE I.—A. G., colored, married, multipara, age 37, entered Sibley Hospital June 17, 1898; she complained of a large, hard swelling of the abdomen; she had frequent urinations, constipation and menorrhagia.

On examination, I found a large movable tumor in the abdomen, not tender on palpation, a hard, symmetrical growth, extending from below, up beyond the umbilicus.

By vaginal examination I found cervix high, and the lower pelvis and broad ligaments free.

Diagnosis.—Large, single fibromyoma of body of uterus.

Operation.—A long, median incision of abdominal wall was made and the tumor easily delivered. The uterine arteries were easily palpated and were very readily tied with silk before the broad ligaments were clamped or cut. After severing the broad ligaments from the side of the tumor, the usual circular incision was made about the lower segment of the uterus, and, after pushing down before and after the peritoneal layers, amputation was done through the junction of cervix and body, stump closed over, broad ligaments sutured with catgut and abdominal incision brought together with through-and-through silk-woven gut.

The tumor weighed eight pounds.

In this case there was no loss of blood save that contained in the tumor. The patient made an uneventful recovery.

CASE II.—Miss B., white, age 34, nullipara, September, 1899, Sibley Hospital.

In this case a tumor the size of an orange was found low down on the posterior wall of the uterus.

Myomectomy.—The tumor was easily shelled out and the incision in the uterus closed.

This was an interstitial fibromyoma of uterus.

CASE III.—Mrs. C., married, multipara, aged 43. She was operated on at Sibley Hospital in March, 1903. Patient very pale and weak from loss of blood. From an examination I learned the uterus was symmetrically enlarged to the size of a cocoanut, rather soft and freely movable. This was a case of soft myoma. A hysterectomy was performed, and she made a nice recovery.

CASE IV.—S. F., colored, married, age 45, multipara, was referred by Dr. Harris, of Virginia, July 10, 1903. This woman had a large fibroid of the fundus uteri. The great difficulty I experienced with this case was to control the excessive bleeding occasioned by the enormously enlarged blood vessels supplying the tumor. We finally succeeded, however, and patient made a good recovery. The tumor weighed about nine pounds.

CASE V.—Miss V., age 32, was admitted to Sibley Hospital June 9, 1904. She had a tumor springing from the upper posterior surface of the uterus and occupying the entire pelvic cavity. The uterus and bladder were pushed to the front and lay over the upper aspect of the tumor. It was impossible to lift the growth into the abdominal wound, so completely did it

fill the pelvic space, until the broad ligaments and uterus had been secured. and even then, owing to the atmospheric pressure, it required a considerable force to get it out.

This tumor weighed about five pounds.

The pressure symptoms were very prominent in this case.

CASE VI.—M. F., colored, age 42, multipara. Had a multiple growth, one large tumor occupying the greater portion of the mass, while a second fibroid, joined to the main tumor, projected into the right broad ligament. This latter had to be removed by myomectomy before any headway could be made in removing the large tumor and uterus.

CASE VII.—Mrs. R., white, age 38, multipara, referred by Dr. John Lewis, of Bethesda, Md. Entered Sibley Hospital October 3, 1904.

From an abdominal examination, multiple fibroids of the uterus were felt, and by a vaginal examination it was ascertained that the pelvis on both sides of the uterus presented tumors in the broad ligaments. This was the most difficult case in my experience.

When the growth was exposed it was found that a tumor the size of a large cocoanut occupied the fundus of the uterus with multiple growths below it.

There were on each side of the cervix in the broad ligaments fibroids the size of large oranges.

The method of procedure I adopted was to do multiple myomectomies.

I divided the uterus transversely and removed the large tumor, then bisected what was left vertically: the broad ligament tumors rolled up into the field of operation and were easily removed. Necessarily there was a considerable loss of blood and shock; with the usual restoratives, however, she rallied and made a good recovery. In all I removed from this case ten tumors, varying in size from a walnut to that of a large cocoanut.

CASE VIII.—J. E., colored, age 37, married, multipara, entered Sibley Hospital November 3, 1904. She complained of a swelling in her abdomen, frequent urination, constipation and menorrhagia. On abdominal examination, a hard, small tumor could be felt over the surface of the uterus; above this was a large fluctuating mass.

Operation revealed the uterus forward and containing three small fibroids on the anterior surface of fundus; above and

densely adherent to intestines, omentum and uterus were three cysts.

I removed the fibroids by myomectomies and drained about a gallon of fluid from the cysts. The openings made in these were sewed into the abdominal wound and drained. It is my opinion that these are results of a tubercular peritonitis. The patient recovered and the cysts are disappearing.

CASE IX.—Large tumor of broad ligament. Mrs. W., age 36, multipara, was operated on by my brother, Dr. J. N. Lewis, at the City Hospital in Roanoke, Va., on May 30, 1903. The tumor was quite large and was in the left broad ligament. The uterus-tubes, ovaries and bladder were carried high up into the abdomen. There were enormous sinuses extending over the surface of the tumor, which sprang from the anterior and posterior surface of the broad ligament. There was considerable loss of blood in this case, and we had some difficulty in controlling and stopping it. We were fortunate enough not to injure the ureter and our patient made a good recovery. This specimen weighed about twelve pounds and is in the Medical Museum at Washington.

My experience with intrauterine fibroids—polyps so-called—has been limited to one case. This patient had a tumor the size of a small orange which had been partially expelled from her uterus into the vagina and was hanging by a broad pedicle. Hemorrhage had been excessive, and the patient was very weak and anemic when I saw her, with Dr. Carmichael, of this city.

Under brief anesthesia the tumor was twisted off with a long forceps applied to its pedicle. The uterus was then packed with iodoform gauze. No further trouble ensued.

These cases, while they do not comprise the entire list, serve to illustrate some of the variations in this field of surgical work.

THE SEQUELÆ AND TREATMENT OF ABORTION.

BY

A. BELCHAM KEYES, M.D.,

Professor of Gynecology, Chicago Polyclinic, Gynecologist to the Polyclinic Hospital. Instructor, Gynecological and Obstetrical Dept., Rush Medical College in affiliation with the University of Chicago.

The subject of the sequelæ and treatment of abortion that I have chosen to present to you to-night is one to which the average text book gives but little space, and the extreme gravity of which is appreciated neither by the laity nor the obstetric-gynecologist. The medical diagnostician frequently fails to estimate the frequency and variability of infection in these cases in their true etiological relations to lesions of other organs than the genitalia, to say nothing of those in the genitalia themselves.

Furthermore, the ever increasing desire to avoid maternity, legitimate as well as illegitimate, has caused induced abortions to be extremely frequent, and to be looked upon with such extreme lightness and indifference that it occurred to me that a review of their multiple sequelæ might serve to accentuate, to the profession at least, the gravity of neglecting to give cases of complete and incomplete abortion the most careful treatment, and at the same time cause them to be ever watchful for the early diagnosis and treatment of the sequelæ that are frequently attributed to anything but their true cause, and which you will see by my paper are comparatively infrequently reported under the heading of abortion.

Drug Injections of the uterus are reported by:

Bellin—In eight cases in which criminal abortion was induced by nitric acid, the abdominal pains were intense, three of the women died, two became insane, and one was artificially delivered.

Barcus reports a sudden death from shock due to an intra-uterine injection of a solution of acetate of lead by the patient herself. No macroscopic wounds were made by the catheter, rendering it improbable that air or fluid could have gained access into the uterine sinuses. He concludes that death was probably due to shock.

Perforation of the uterus is reported by:

Ludwig Hektoen, who made an autopsy on a woman dead of

diffuse purulent peritonitis, due to the perforation of the posterior uterine wall. The history was as follows: The patient had had three criminal operations (for the induction of immature labor), each operation being about a week apart. The third operation was performed on November 4. On November 10 the family physician attended the case, when a four and one-half months fetus was expelled, but not the placenta. Tamponade of the vagina was performed and allowed to remain twelve hours. Its removal was followed by the expulsion of the after-birth and membranes. A bichloride intrauterine douche was now given. On November 11 the patient began to suffer from abdominal pains and fever, which continued till November 21, when the patient succumbed.

Mann reports three cases of perforation of the uterus, with prolapse of the intestines.

The first was a case of abortion. The patient herself perforated the posterior wall of the uterus with a catheter in which there was a mandarin. The attending surgeon, on attempting curettage at once recognized the intestines and a laparotomy was performed, the patient recovering.

The other two, though not strictly belonging to this paper, are interesting. They were caused by the dilator in the hands of a surgeon; both had a prolapse of the intestines, and both cases died.

Winter reports a case of uterine perforation of the posterior wall, with septic peritonitis, and death on the sixth day.

Dr. Henrotin has kindly permitted me to report the following case, with the facts of which I was conversant at the time of their occurrence. Mrs. H., age about 35, had three attempts made at criminal induction by a doctor, the last attempt causing extreme pain. Two days later the patient developed fever and was attended by the abortionist. On the ninth day Dr. Henrotin saw the patient. She was then vomiting, was very tympanitic and had a frequent, thready pulse, with marked general cyanosis. Laparotomy was performed as soon as she arrived at the hospital. On opening the abdominal cavity fluid was encountered, the intestines were found agglutinated with a whitish fibrinous exudate, and on being separated revealed a roll of adherent omentum. On separating this a piece of stiff English linen catheter eight inches long was brought to light. On the posterior surface of the uterus a small scar indicated the apparently healed perforation.

For three days after the operation the patient improved, but she again became very tympanitic, and vomiting set in, with signs of collapse. The abdomen was at once reopened, coils of intestines freed and the abdomen reclosed. Two hours later there was a free evacuation of feces, a subsidence of the symptoms, and the patient went on to uninterrupted recovery.

Air Embolism as a cause of death is reported in two cases by Hektoen. These patients were supposed to have taken a vaginal douche while in a sitting position with a Davidson bulb syringe. One was a primipara at 19, the other a 7-para, and both in the fourth month of pregnancy.

The possible accidental introduction of the tip of the syringe into the external os uteri would naturally be the more likely in the multipara. The style of tip used is not mentioned. In both cases the partial detachment of the placenta was easily demonstrable, and in the veins several places were found where the blood was separated in broken-mercury-column fashion by a more or less length of air. The left ventricle was tightly contracted, the right containing a large quantity of frothy blood.

The post-mortem examinations in these cases were made, one twelve and the other twenty-four hours after death. Hektoen thinks them genuine cases of air embolism; at the same time he points out that one should not fail to recognize other causes of gas in the blood, *e.g.* that due to the *Bacillus ærogenes capsulata* of Welch and Nuttall, as found by them in a case eight hours after death following hemorrhage of the lungs.

W. W. Gannett also reports one death from embolism following criminal abortion. L. J. Mitchell cites one death at the tenth week of pregnancy, in which the autopsy was made six hours after death. The right ventricle was filled with air and frothy blood. The membranes had been punctured and separated from the uterine cavity over an area of 5 cm. in diameter.

Endometritis.—I believe you will agree with me that endometritis is very common, yet I believe we should make some distinction between (1) the purely post-abortion endometritis and (2) endometritis that was present at the time the pregnancy occurred, due, perhaps, to that occultly theoretical infection of Noeggerath, or the sequel of gonorrhea itself. Great stress is laid by Bumm upon the latter type of infection as possibly causing the abortion, due to the endometritis decidua present or possibly supplying the infection for the lighting up of a post-abortion puerperal fever, and also as leaving behind an endometritis after

so-called recovery. No specific case was encountered by me under the title of abortion.

Uterine Abscess occurring following criminal abortion is reported by Caroles in a 32-year-old Chinese woman.

Endosalpingitis purulenta acuta is recorded by Noble in a case as a result of abortion; there was also an abscess of the ovary. Recovery occurred after removal of both the infected adnexæ. The implication of the tubes after abortion by an ascending puerperal infection, either with a catarrhal or pyosalpingitis, is so extremely common that one would expect to find very frequent mention in the literature, but the operation for the tubal disease together and the discussions on operative technique have almost buried the etiologic factor, so that I have found on record under that particular heading only the one solitary case out of the thousands of cases that have been reported operated on for infection.

Martin records one-fourth, and Rosthorn one-third of his cases as due to puerperal infection.

Ovarian Abscess has received the same neglect as the tube, although the so-called Corpus Luteum abscess has been studied by Menge and others, and found usually to contain the same kind of bacteria as those to be cultivated from the infected tube. One case has been reported by Dorsett, who found an abscess of each ovary following abortion in a prostitute aged 18; it was complicated by septic endometritis, salpingitis and general peritonitis, but no other cases of this character were encountered in my search.

Tubo-Ovarian Abscess.—Keyes: Mrs. L., aged 26, had missed one period, which she says reappeared with intermittent pains (probably abortion pains) three days after the introduction into the uterus of a knitting needle. The period lasted seven days and was rather profuse. Two weeks later, on being called, I found what appeared and afterwards proved to be a fibroma, reaching about two finger breadths above the pubis, while posterior to the cervix was a tender, club-shaped mass that apparently took its origin at the cornua uteri, passed laterally outwards towards the side of the pelvis, and then posteriorly. The evening temperature was never higher than 101° Fahr. On opening the abdomen I found a fibroid the size of a fourth month pregnancy, and behind the same a tubo-ovarian abscess containing about 16 cc. of pus. The uterine tumor was removed by a wedge-shaped incision at its pedicle, and then the tube and ovary were shelled out of their adhesions and removed. The abdomen was closed in layers,

with an iodoform gauze drain at the lower angle of the wound. Recovery was uninterrupted. The husband afterwards presented me with a bone knitting needle which the patient, according to him, had used in the uterus a hundred times.

Metroperitonitis as a cause of death is reported by Reed as a result of an induced immature labor at four and a half months.

Dumas cites a case of metroperitonitis and acute pelvic peritonitis. There was likewise an abscess of the broad ligament, with hectic fever, inanition, and marasmus.

Seydel also describes a case of induced abortion, followed by death due to peritonitis, in which, at the autopsy, an ulcer was found on the uterine wall; there was also extensive disintegration of the blood and jaundice.

Hematocoele.—O'Reilly records a case of hematocoele around the uterus (supervening on an abortion). Three months later supuration occurred, and the abscess discharged itself externally near the umbilicus, after which the patient recovered. This case brings to mind the condition in which the supposed abortion was only the uterine hemorrhage and expulsion of the false decidua in a case of extrauterine pregnancy, and is a plea for a thorough pelvic examination in each case.

Thrombophlebitis Uteri, with Phlegmasia Alba Dolens and Pulmonary Embolism (Abscess).

Hoche reports a fatal case of utero-ovarian thrombosis after abortion, extending into the vena cava and heart. Death was supposedly due jointly to uremic symptoms, and to the pulmonary infarction.

A. C. Hawley reports abortion followed by pleuritis, then a lobar pneumonia, first one lung, afterwards of the other, and finally phlegmasia alba dolens.

Dr. Carl Wagner of Chicago saw 14 days after abortion, thrombosis, and gangrene of the left leg extending as high as the knee. This case was seen in consultation by the late Dr. Fenger.

Allen A. Jones reports death following abortion from pneumothorax. A fragment of the septic thrombus was found in the uterine vein and vena cava, also abscess of the lung and the destruction of the termini of two small bronchi through which the air gained access to the pleural cavity.

Keyes. Case I. In 1897, M. S., age 29, wife of a policeman, who was said to be suffering from a galloping consumption and was under treatment for the same. On making a careful physical examination I found a circumscribed dull area over the left lower

lobe in the posterior axillary line about the size of the palm of the hand; the periphery of the dull area giving a bronchial fremitus and voice much more marked than the middle. The vaginal examination showed scars around the cervix and some subinvolution, but nothing else. The anamnesis was that of a possible embolism of the lung, though pregnancy and abortion were both persistently denied. A needle inserted drew off pus. The preparations for the operation were made, but 4 hours later the patient had another sudden attack of dyspnea following a forbidden attempt to sit upright in bed, in which attack she succumbed. No autopsy was allowed. The husband afterwards admitted that a criminal abortion had been performed some two weeks previously.

Keyes. Case II. W. J., single, age 30, came to the hospital with a history of an abortion 6 days previously. Twenty-four hours after entry she was in a comfortable condition with but a temperature of 100° Fahr. During the afternoon she complained of a sudden pleurodynia with dyspnea; physical examination was negative. Six hours later I found pleuritic friction, and later still dullness over the friction area and all the signs of consolidation. The case was seen in consultation by the late Dr. Fenger who advised waiting. Death resulted 24 hours after, and the autopsy showed abscess of the lung, following purulent uterine thrombo-phlebitis.

Keyes. Case III. I made a post-mortem examination upon a married woman in the reproductive period. She had been treated for intercostal rheumatism for some days (as diagnosed in consultation) by one of the best medical men in the city; the possibility of pulmonary abscess had never been mentioned to the attending physician who was entirely at a loss to understand the cause of death.

Sapremia has not been associated with the subject of abortion in the literature at my disposal.

To complete my paper I will with your permission quote two of my own cases that have been operated by me within the past month.

Case I. Mrs. H., age 39, 2-para; finding herself approaching the second absent period proceeded to one of the many midwives who are so numerous in our cities and had a criminal operation. Forty-eight hours later I was called in to see her. The patient had had a chill, temperature 104° Fahr., with slight pains.

The examination revealed a probable pregnancy about the second month, but no show, os completely closed, no apparent odor, no

uterine or peritoneal tenderness whatever. The temperature continued high, and the following day a slight odorous show began. I made a dilatatio forcé under anesthesia and removed a putrid product of conception entire and packed the uterine cavity with iodoform gauze, with the result that the temperature was normal in 24 hours.

Case II. Mrs. S., age 27, V-para, had missed one period only and judged herself pregnant, she introduced a knitting needle into the uterus with the result that in 48 hours she had a chill and temperature of 103° Fahr., with pains and profuse hemorrhage.

Examination showed os patent and profuse hemorrhage with some uterine tenderness. Ergotin was given to lessen hemorrhage. On the following morning ether being administered, the cervix was dilated under strict antiseptic precautions, and the product of conception removed, and the uterus tamponned for 24 hours with iodoform gauze to control the profuse hemorrhage. The temperature was normal twenty-four hours after the evacuation.

Septicemia.—Blesh reports a case of miscarriage of twins at the fifth month followed by septicemia lymphatica et venosa, and he also states malarial poisoning.

Begouin and Anderodias saw post-abortion infection followed by vegetant endocarditis, embolism, gangrene of one lower extremity which necessitated amputation, followed by death.

Musgrave reports abortion at the third month followed by septicemia and fatal cardiac thrombosis in a woman aged 32. The secundines came away in fragments with fetid discharge. Two weeks later, chills, high temperature and diarrhea occurred. The patient on the tenth day on being raised in bed complained of sudden violent pains in the chest with marked dyspnea. Death occurred the next day. No autopsy. The death in this case probably was due to pulmonary embolism.

Pyemia.—Carl Wagner reports a lethal case of 30 or 40 pyemic abscesses in different parts of the body following an abortion. The patient was a multipara thirty years of age.

Wills and Spencer report a fatal case after abortion. The autopsy revealed a collection of fluid in the posterior mediastinum.

Giddings describes a (questionable) case of pyemia following abortion with anomalous symptoms, in a multipara, aged 32, who during the whole of her sickness was clear in intellect, excepting one night of mirthful delirium. The treatment consisted chiefly in nourishment, and the patient made good recovery.

Beck T. Snow reports a lethal case of puerperal pyemia after an induced abortion in a woman aged 26. The following points were demonstrated post-mortem:—

(1) The adhesions of a portion of the placenta, and a purulent fluid on the endometrium.

(2) A patulous condition of the uterine sinuses, and veins due to incomplete uterine contraction.

(3) Purulent fluids in the uterine sinuses, and veins and purulent infection of the general system.

Owen reports a cardiac thrombosis following abortion.

Tetanus as a result of abortion appears to be common.

Bauer in his article on tetanus says abortion or parturition are rarely followed by tetanus, but the literature on the subject shows it to be a comparatively common sequel, yet all cases prior to 1885, when Nicolai recognized the bulbous end bacillus, and in 1889, when Kitasato isolated it, must be accepted with caution.

M. Mascarel saw a case of puerperal tetanus accompanied by continuous severe hemorrhages which recovered.

Lee reports an instance of tetanus in a colored woman, aged 25; at the autopsy, peritonitis, cellulitis, abscess in the Fallopian tube, abscess in the peritoneal cavity surrounding an ovary, metritis and embolism of both ovarian veins, were found.

Boyd, Surgeon to the St. Michael's Hospital, Kingstown, also saw a case following a third-month' abortion with lethal issue 6 days from the onset of the tetanus. This author attributes the tetanus to irritation which the brain suffered from deprivation of blood in an already anemic subject.

Banga published a lethal case four weeks after abortion in which there was retention of a segment of the placenta; death occurring during a spasm.

Brownlee also reports a case in a four-month abortion. The patient did well till the seventh day when trismus set in. Death occurred during a convulsion, 54 hours after the onset of the disease.

Dr. Carl Wagner, in 1898, was called to attend Mrs. L., complaining of rheumatism in the right side of the neck and shoulder, supposedly contracted by sleeping on the roof during a hot night. A feeling of uncertainty about this rheumatism made him return later under the pretense that he had forgotten something as it occurred to him that the inexplicable symptoms might be due to tetanus. He questioned the patient again thoroughly, but without getting any satisfaction. Amenorrhea was denied. Her old

mother who was following our conversation called me to the next room and told me that her daughter had had a three-months' abortion about 8 days previously. The examination located an open cervix in which I could feel a large piece of placenta. I then made the diagnosis of tetanus infection of the uterus. On my return, I prepared to operate, and found that lockjaw was already quite pronounced, several convulsions having taken place. I took smears from the vagina, uterus, and placenta, evacuated the uterus, and administered anti-tetanus serum. The smears were stained and examined at Rush Medical College that afternoon, and confirmed the diagnosis of tetanus by the presence of tetanus bacilli. The patient died that night in oposthotonic convulsions.

Nervous Lesions following abortion seem to be comparatively frequent as a result of the infection.

Ganett cites a case followed by chorea and epilepsy and later death. This patient had had fourteen successive miscarriages in her nine years of married life.

Hemiplegia is reported by Fenwick, who states a portion of the placenta was adherent, necessitating vaginal tamponade to secure dilatation of the os before the uterus could be emptied. Later, the patient's mouth was found drawn to the right side. Sensation was not impaired, but articulation was imperfect.

Hemianopsia Homonyma. — Keyes— In January, 1903, I was called in consultation to see Mrs. H—, age 30, primipara. The examination revealed a pregnancy about the eighth week; the cervix was dilated, from which a profuse discharge of blood and odorous shreds escaped; pains strong; temperature 101° Fahr. The patient also complained of dimness of vision; the pupils reacted sluggishly, but there were no paralyses. I administered ergot, and refused to interfere for fear of disturbing thrombi, and the uterus evacuated itself in four days. For the next few days the blindness was complete, but the temperature fell to normal, and the patient recovered, with a persistent impairment of vision. In two weeks the vision had returned to the R. halves of the retinae, while the left still remained sightless. The case has been examined for me by Dr. Alfred M. Hall, 100 State street, who confirms the diagnosis, and considers it one of embolism in the chiasma just back of the semi-decussation, or in the optic tract, or in the visual field of the cortex, *i.e.* occipital lobe. There are no signs of arteriosclerosis, endocardial lesions, nephritis or syphilis. In January, 1904, the patient gave birth to a full term healthy child, and both herself and the child are now in vigorous health.

Not a single case of hydatidiform mole is reported as a sequel to abortion, though in Findley's collection of reports of 210 cases, 20 had aborted once, four twice, two three times, one four times and two six times.

Malignant Disease, as a sequel to abortion, is reported by Koblanck, one case, and one case by a midwife in another number of the same journal. In this connection also I would like to refer to the papers on the subject of chorio-epithelioma outside of the placental site recently published in the *Journal of the American Medical Association*, November, 1904, by Findley, and that by Schmauch in *Zeitschrift für Geburtshülfe u. Gynec.* Band 49, Heft 3, and Teacher, *AMERICAN JOURNAL OF OBSTETRICS*, page 359, vol. 48.

The mortality of abortion has been given by:

Pinard, in his hospital service, as 0.81-100 of 1 per cent.

Tardieu estimates the mortality of induced abortion at nearly 50 per cent.

Jardien reports 34 cases of induced abortion, of which 22 died, or about 65 per cent.

Maygrier tabulates 44 cases of criminal abortion, with a mortality of nearly 60 per cent.

THE TREATMENT OF ABORPTION DEMANDS THAT THE FOLLOWING
QUESTIONS BE ANSWERED.

(1) Is the woman pregnant? This is answered by the amenorrhea and other objective and subjective symptoms and signs of pregnancy. This question does not belong properly to the subject in hand, yet, I would like to remark, may, if denied, be quite a difficult one to answer, especially in multipara at the sixth to the eighth week, when the uterus may not have typically developed. Certain pathological conditions with irregular menses may have Hegar's sign simulated to a degree that makes a certain diagnosis difficult at the first examination.

(2) Is she aborting? Hemorrhage and intermittent pains accompanied by patency of the os during the reproductive years (in the absence of myoma or polyp. or extra-uterine pregnancy) point to abortion. The expulsion in part or in toto of the product of conception is macroscopic proof. Microscopic examination of expelled shreds (or curettings) showing decidual cells only is only presumptive, but the presence also of chorionic villi is proof of both an intrauterine pregnancy and abortion.

(3) Is the threatened abortion inevitable? In a healthy

woman accidental trauma with or without fright, followed by even profuse hemorrhage, strong pains and patency of the os, may not necessarily mean more than a threatened abortion. Both pains and hemorrhage may cease under appropriate treatment (especially if the external os be still closed and portio and cervix still preserved, and the pain and hemorrhages be not severe). Pregnancy will go to term if the placental detachment is not too great to allow of the continued life and nourishment of the embryo. Even if the fetus dies of asphyxiation consequent to too extensive detachment, it may be retained in a healthy uterus as a mole (missed abortion).

Two things should especially be thought of in abortion:

(1) The presence of an old endometritis, or a recent infection due to criminal interference, or examinations.

(2) The possibility of syphilis. In the presence of either of these, the continuance of the pregnancy is very improbable, other less frequent factors should be borne in mind.

In the first half of pregnancy, whether the fetus be living or not, it is often difficult to decide, and especially in the first eight weeks.

In the second half of pregnancy we can determine the condition of the fetus more certainly by its active movements and heart sounds.

The Treatment of Simple Threatened Abortion (a) where it is considered best to try and arrest it.

Quiet and absolute rest in bed are indispensable prerequisites, as the increased abdominal pressure of the upright position tends to increase the detachment of the placenta and aggravates the hemorrhage. Internal examinations should be made under the strictest antiseptic precautions, and are often better not made at all, until antisepsis may be assured, and then such examinations should be limited in number.

Pains also increase the placental detachment and hemorrhage, so we must allay them with opiates per mouth or rectum. Regulation of the bowels is essential, and antiseptic vulva pads should be used. Ice over the abdomen increases uterine contractions, and thereby increases placental detachment, and, consequently, hemorrhage. Ice, therefore, is contra-indicated in abortion. Ten to fourteen days after the hemorrhage and pains cease the woman may get up. The patient should stay in bed for two or three days at a time each period is due till the middle of pregnancy is past.

The Treatment of Inevitable Abortion may be divided into the (a) Expectant, (b) Operative:

(a) The expectant treatment is employed when the attendant considers the abortion inevitable, and when, from any existing pathological condition, it is demanded that the uterus shall be emptied, and yet the demand for the evacuation is not urgent, *e.g.* in the absence of fever or profuse hemorrhage. The examinations should be made under the strictest antiseptic precautions, and as infrequent as is compatible with the safe guidance of the delivery. Even until three and a half months I have usually advised rest in bed, regulation of the bowels, ergotin, and antiseptic vulva pad. Where the attendant lives at a distance it may be advisable to apply a vaginal tampon, so as to guard against hemorrhage in his absence; the tampon to remain only 24 hours without changing. Careful search for fetus, placenta and membranes should be made in the clots at each visit. Frequently the product of conception, placenta and membranes are expelled *complete*, and the uterus retracts; pains and hemorrhage both cease. If the after-birth be still in the uterus, *i.e.* in *incomplete abortion*, renewed hemorrhage, renewed pains and expulsion of placenta and membranes occur; oftentimes before this is accomplished, re-tamponade may be necessary. If fever, with or without chills, and an odorous discharge of shreds and blood appear, the indication is for immediate evacuation; as is also the appearance of profuse hemorrhage.

Vaginal tampons are, I believe, better applied wet. I usually apply them through a bivalve speculum directly out of the solution basin, which is held close to the vulva. The lower one-third of the vagina should not be filled, as it interferes with urination. The bearing down and displacement backwards of the uterus, due to a full bladder, hinders the expulsive power of the pains and increases the hemorrhage.

One square yard of iodoform gauze cut in strips for a primipara and $1\frac{1}{2}$ for a multipara usually suffice in quantity. It can be inserted directly from a solution of 2 per cent. lysol or 1.5000 bichloride. The vaginal tamponade alone does not always suffice to allay the hemorrhage, as the blood which may be unable to escape per vagina, may dilate the uterus and a fatal intrauterine hemorrhage occur. This was seen by Klotz in XII-para, 13 weeks pregnant, in which the vaginal tampon only was applied; twelve hours after the uterus was distended with blood to the size of an eight months' pregnancy, and the patient died.

The Intrauterine Tampon is the more certain and scientific, as

the pressure is brought to bear directly on the bleeding surface. A narrow strip of gauze is passed through the dilated cervix, and the fundus and corpus packed with sterile iodoform gauze. The pains are excited and the expulsion of the product of conception assisted by the presence of an intrauterine tampon, both fetus, placenta and membranes and tampon often being expelled within 24 hours. Duehrssen says in certain cases this tampon has to be repeated in 24 hours, and that the second packing usually suffices; the further advanced the pregnancy, the better are the results of intrauterine tamponade.

He advises intrauterine tamponade in hemorrhage with doubtful diagnosis, inevitable abortion, incomplete abortion and immature labor where the after-birth is retained.

A vaginal tampon should always be applied as well as the intrauterine, making in reality a utero-vaginal tamponade.

(b) Operative.

(1) *Preparations:* (after evacuation of bladder and rectum).

(a) Patient transverse on bed or, better, on a table.

(b) Scrub vulva, shave, wash with alcohol, lysol, 2 per cent., or bichloride 1-2000.

(c) Chloroform or ether anesthesia.

(d) Scrub or douche vagina.

(2) *The Operation:*

(a) Introduce the speculum, preferably the specule à boule of Auvard.

(b) The cervix is now seized with the volsellum and the uterus drawn down nearer the introitus vaginæ.

(c) Douche vagina again with 2 per cent. lysol or 1-2000 bichloride.

(d) Introduce dilator into external os, widen.

(e) Swab out the cervix well with cotton dipped in lysol or other antiseptic, then dilate internal os with Goodell dilator (in sixth to eighth week one finger wide, three months two fingers wide).

(f) Introduce finger (the other hand, or, better, the hand of an assistant holding down the uterus).

(g) Shell out product entirely, if possible, and then examine for retained pieces, especially in the tubal corners or angles.

The loop curette can be used to remove small pieces (beware of pushing the curette through the friable uterine wall). Ecouvillonage can be employed to bring away shreds. Intrauterine

douche can be employed. When the uterus is empty it usually contracts and hemorrhage ceases. It can be swabbed out if necessary. A good prophylactic measure is to tampon the uterus with iodoform gauze. A word on the futility and danger of curettage alone may be in keeping here, considering the frequent and illogical use to which the instrument is so often put. With the finger one can often feel one-half of the placenta, or even the embryo, after a curettage in which one could not get a piece more because the curette simply teased to shreds, but did not remove the uterine contents. Curettage has been done in very early pregnancy without even disturbing the pregnancy in any way, the patient, to the surprise of the operator, being delivered of a normal child at term.

Curettes are dangerous if too small; they are very easily pushed through the uterine wall (often friable during abortion) into the abdominal cavity, causing peritonitis. Holding the curette lightly like a pen it is passed carefully to the fundus and withdrawn, firmly scraping the uterine wall. Each portion of the endometrium should be gone over carefully to bring the curette over all the surface in turn. Curetting and its results can be well studied by smoking a lamp chimney and then trying to remove the carbon with the curette, in a darkened room.

BIBLIOGRAPHY.

- Bellin (*Nouv. Arch. d'Obstét. et de Gynec.*, Oct., 1891).
 Barcus (*Med. News*, August 10, 1895).
 Hektoen (*Chicago Medical Recorder*, February, 1891).
 Private Files of Dr. Henrotin, Chicago.
 Hektoen (*Chicago Medical Recorder*, February, 1891, and *Clinical Review*, October, 1892).
 Gannett (*Boston Med. & Surg. Journ.*, Jan. 12, 1882, p. 28).
 L. J. Mitchell (*Medicine*, Feb., 1896).
 Caroles (*Vol. V., Annals of Gynecology*, 1891).
 Noble (*Annals of Gynecology*, 1889-90, vol. 3, p. 350).
 Dorsett (*Weekly Med. Review*, Feb. 14, 1891, p. 122).
 Reed (*Toledo Med. & Surg. Journ.*, 1877, vol. 1, p. 165).
 Dumas (*Annals de Gynecologie*, 1887, vol. 27, p. 201).
 Winter (*Zeit. f. Geburtshülfe u. Gynecol.*, 1887, Bd. 14, p. 242).
 Seydel (*Vierteljahresschrift f. gerichtl. Medicin*, 1894).
 O'Reilly (*Lond. Lancet*, Oct. 12, 1895).
 Hoche (*Ann. de Gyn. et d'Obst.*, May, 1902).
 Hawley (*Med. & Surg. Reporter*, 1890, Apr. 19, p. 449).
 Jones (*Med. News*, Dec. 12, 1891, p. 688).
 Mann (*Med. & Surg. Rep.*, July, 1895).
 Winter (*Zeitschrift für Geburtshülfe u. Gynecologie*).
 Keyes—A. Belcham (*Chicago*) Private Files.

- Blesh (Kansas City Med. Index, 1895, vol. 16, p. 256).
 Begouin (Rev. Mens. de Gynec., Obstet. et Pediat. de Bordeaux, 1901, vol. 3, p. 10).
 Musgrave (The Obstet. Jour. of G. Brit. & Ireland, 1879-80, vol. 7, p. 31).
 Currier (Annals of Gynec., 1892-93, p. 335).
 Wills & Spencer (Lond. Lancet, June 22, 1901, p. 1759).
 Giddings (Bost. Med. & Surg. Jour., 1872, vol. 86, p. 402).
 Beck (Trans. of the Obstet. Soc., 1867, vol. 9, p. 275).
 Owen (Lond. Lancet, June 29, 1878, p. 933).
 Bauer (Ziemssen's Encyclopædia, vol. 5, p. 307).
 Mascarel (Bull. de la Soc. de Chir. de Paris, 1864, 2d series, vol. 5, p. 276).
 Wiltshire (Trans. of the Obstet. Society, 1871, vol. 13, p. 133).
 Lee (Nar. Med. Jour., 1871-72, vol. 11, p. 303).
 Boyd (Dub. Jour. of Med. Sciences, 1874, vol. 54, p. 583).
 Banga (Am. Jour. of Obstet., 1879, vol. 13, p. 143).
 Brownlee (New Eng. Med. Monthly, Nov. 1891, p. 59).
 Wagner, Dr. Carl (Case Files). (Chicago.)
 Ganett (N. Y. Jour. of Med. & the Allied Sciences, 1854, vol. 13, p. 238).
 Fenwick (American Jour. of Obstetrics, April 1891, p. 466, Amer. Text Book of Obstetrics, p. 266).
 Koblack (Allgemeine Deutsche Hebammen-Zeitung, 1902, No. 19, p. 351).
 Labusquière.
 Gottschaff & Koettnitz (Ann. de Gynecol. et d'Obstet., Paris, Apr. 1894).
 Pinard (Etude Médico-Légale sur l'Infanticide, Paris, 1868).
 Maygrier (L'Obstétrique, 1902, vol. 7, p. 257).
 Read (Bost. Med. & Surg. Jour., 1872, vol. 86, p. 351).

CORRESPONDENCE.

MEMBRANOUS DYSMENORRHEA

To the Editor of THE AMERICAN JOURNAL OF OBSTETRICS:

My dear Dr. Wells—Will you kindly insert the following request for pathological material in your journal.

I am at present engaged in the study of membranous dysmenorrhea, and am greatly in need of material. I would be indebted to any physician who would mail me casts of interior portion of the uterus discharged by dysmenorrhoeic patients. The fresh specimen should be put in a bottle containing 10 per cent. solution of formalin.

Thanking you in advance, I remain,

Very sincerely yours,

HOWARD A. KELLY,

1418 Eutaw Place,

Baltimore, Md.

January 25, 1905.

TRANSACTIONS OF THE NEW YORK OBSTETRICAL SOCIETY.

Meeting of January 10, 1905.

The President, J. RIDDLE GOFFE, M.D., in the Chair.

CASES OF EXTRAUTERINE PREGNANCY WITH ATYPICAL SYMPTOMS.

DR. HERMANN J. BOLDT showed a number of specimens. S. P. consulted me the first time on May 28, 1904, because of constant uterine bleeding during the preceding five weeks. At no time had even the slightest pain been present. The uterus was somewhat relaxed in consistence and slightly larger than normal. The interior was found empty on examination with a small curette. The pelvic organs were not sensitive on examination. She was subsequently seen twice, with the result that the bleeding had been stopped by the internal administration of hydrochlorate of cotamin (stypticin) and local treatment. The diagnosis had been made of an abortion at an early stage of gestation, which, it was subsequently learned, was also diagnosed by other confreres. It was also elicited that the patient had been curetted four months before the time of his consultation for a similar condition. On June 6th, at 6 A.M., a request was made to see the woman at her home because of a sudden attack of intense pain in her epigastrium and moderate "drawing" pains in the lower abdomen, radiating upward and associated with fainting. The previously made diagnosis was now changed for one of ruptured tubal pregnancy. The patient was ordered to be sent to the hospital for operation. The diagnosis was based principally on the sudden attack of pain in addition to the sensitiveness of the cervix on bimanual examination, otherwise the examination of the pelvic organs gave a negative result. On arrival of the patient, about four hours later, the operating room was engaged and the patient, feeling quite well now, begged not to be operated upon and absolutely declined to be prepared for operation. Her pulse had gotten in normal condition; the previously existing slight anemia had also disappeared, so that I thought that I might have erred in the diagnosis made a few hours before, and I contemplated making a vaginal puncture for diagnostic purposes during the afternoon or the following day. At the time of my afternoon visit the condition had continued to improve, there had been no recurrence of any pain since her arrival at the hospital, so that I still felt more justified to doubt the correctness of the diagnosis, yet the patient was ordered to be prepared for exploratory puncture and also for abdominal section, should this be decided upon, for the following day. When seen on June 7th the woman was found in collapse, which was said to have occurred suddenly a few minutes before my arrival. She had

been reported in excellent condition fifteen minutes before this time. Because of refusal of consent to operation by relatives another patient was first operated upon, so that about one and one-half hours was again lost before the husband acquiesced in giving the required written consent to operation. By this time the woman was in such critical condition that the administration of an anesthetic was considered too risky and a rapid vaginal section was made without anesthesia, in which Dr. Carter Cole was good enough to render valuable assistance. A very large quantity of blood escaped, probably 1,500 c.c., and with it the small embryo here presented. The bleeding left Fallopian tube was clamped. The reason why the tube had not been previously felt on examination was found to be, that it was held high up in the pelvis by adhesions. The patient did not rally from the shock in which she was at the time of the operation, dying two hours after operation.

II.—R. L., whom I saw with Dr. Wainright and Dr. Roginsky on Aug. 3, 1904, æt. forty years, seven children; the last ten months ago; she had menstruated twice since her confinement, the last time eleven weeks ago. During the last eight weeks the patient had had periodical attacks of abdominal pain lasting about six hours, located in the center of the abdomen, and accompanied by much abdominal distention. The bowels are regular. The appearance of the woman is anemic. The abdomen is greatly distended with fluid which is believed to be ascitic. A diagnosis of cirrhosis of the liver had been made by several physicians before the patient entered the hospital. Bimanual examination unsatisfactory because of the abdominal distention with fluid. All that can be determined is that the uterus is slightly enlarged and is freely movable. No tenderness on examination. No pain has been present since her admission to the medical ward one week previous. An exploratory abdominal section was advised, but consent could not be obtained until three days later. A mitral regurgitant murmur is present. On operation a very large amount of fluid blood escaped from the peritoneal cavity, and with it a fetus of three and one-half months' development. The placenta was attached to the intestines, principally to the sigmoid flexure. A small part of the placenta was attached to the fimbriated extremity of the left Fallopian tube. The placenta was readily detached with but very slight oozing, which ceased on pressure. The patient went into shock within five minutes after the beginning of the operation, and despite all therapeutic measures employed did not rally, dying four hours later. In this instance we evidently had a tubal abortion at an early period which did not give rise to marked symptoms; the placenta becoming attached to the intestines and to the fimbria of the affected tube. As development of the gestation product proceeded, there was at times a slight detachment of the placenta, hence the intraperitoneal bleeding.

III.—A. P. æt. thirty-six years, married twenty-two years, six children, the last seven years ago. I saw the patient September

10th. She had not noticed anything unusual until the latter part of August, when she began to have atypical bleeding which resisted treatment under the direction of several physicians. It was thought that she had had an abortion and she was curetted. Some tissue, thought to be placental, was removed with a curette by her doctor. When seen in consultation the abdomen was greatly distended and the woman very anemic from the loss of blood. While there is no pain when the woman remains quiet, there is very marked sensitiveness upon even light abdominal palpation. The pelvic organs also are very sensitive to touch on examination. There is a soft mass in the pelvis behind the uterus. Defecation and micturition are painful. Diagnosis of tubal pregnancy with a continuation of bleeding in the peritoneal cavity. On operation about two hours later the diagnosis was corroborated. The embryo was found to be about to be expelled from the Fallopian tube. Only the terminal part of the tube containing the embryo was tied off. The intestines were greatly distended and peritonitis was present in an early stage. While the patient's condition before operation was bad, there having been a large quantity of blood in the peritoneal cavity, and the pulse of poor volume and 140, she began to improve very rapidly, although it was necessary to make an intravenous infusion.

IV.—The patient from whom the fourth specimen was obtained had been married 10 years and was never pregnant. She was perfectly well and had always menstruated regularly until September. While she was combing her hair she was seized with an intense attack of pain in the lower abdomen, and was found in collapse 20 minutes later. A ruptured tubal gestation was suspected and the diagnosis corroborated by operation within a couple of hours. Recovery was uninterrupted.

While it is not uncommon to meet with instances of extra-uterine pregnancy with atypical symptoms, it is seldom that patients are seen who present so little or no clue at all to the real condition, and it is still rarer to find four such cases in such a short period of time.

II. HYSTERO-SALPINGO-OOPHORECTOMY FOR DOUBLE OVARIAN ABSCESS WITH GAS BACILLI. RECOVERY.

E. S., æt. 36 years, married 13 years, never pregnant; menses began at 13 years, regular, no marked dysmenorrhea, of 4 days duration. The severe illness began July 14th, 1904, consisting of chills and fever, profuse perspiration, and constant pain in the lower abdomen. The pain is griping in character, and the feeling as though gas were present in the lower abdomen. Bimanual examination without ether is painful and cannot be accurately made, it reveals, however, the presence of a tumor to the right of the uterus, estimated at about 4 inches in diameter, closely hugging the uterus which is immovable; there is also much thickening at the floor of the pelvis. Because of the high position of the tumor, its globular shape, and the elevation of

temperature (103° F.) the diagnosis of ovarian abscess or a small suppurating ovarian cystoma with adhesions is made. Under ether a small globular tumor is diagnosed on the left side, also immobile and densely adherent. This is considered to be either a pyosalpinx held high up in the pelvis by adhesions, or an ovarian abscess. In view of the active fever, chills, and sweats, the contents of the tumors are considered to be extremely virulent, and suitable measures are taken to prevent the probability if not possibility of contamination of the general peritoneal cavity with the contents of the tumors in the event of leakage during operation. The intestinal adhesions to the surface of the tumors are not as firm as has been anticipated; with careful technic they are separated without causing a break in either tumor, so that it was possible to wall off the peritoneal cavity before beginning to enucleate the tumors. The tumors were both ovarian, and resting on top of the practically normal Fallopian tubes. It at once became evident that it would be safest to remove the uterus at the same time. The left ovarian abscess was just as tense as that on the right side, and was estimated to contain about 4 ounces of pus. Whilst endeavoring to separate the dense adhesions at the base, an escape of gas occurred with such loud sizzling that it could be plainly heard by those ten feet distant, and the stench accompanying this was so intense that it was perceived at a still greater distance, and necessitated me and my assistants to temporarily turn aside. The tumor collapsed, and there was not more than about one drachm of thin greenish pus in it. Evidently we were dealing with an ovarian abscess which had become infected with colon bacilli, and subsequently distended by gas bacilli. That perhaps explained the peculiar greenish-gray appearance of the pelvic peritoneum in the immediate vicinity of the ovarian tumor. The right ovarian abscess contained similar greenish pus, and also ruptured during enucleation. The interior of both abscess sacs looked thoroughly rotten, like beginning gangrene. The uterus and adnexa were removed en masse by pan-hysterectomy, and the suspicious looking part of the pelvic floor was covered with iodoform gauze which was carried into the vagina. Subsequent questioning elicited the fact that the husband had had gonorrhea before his marriage, the attack of three years duration; further that the patient had had an uncomfortable feeling, and at times more or less pain for years.

The interesting features are several. First the cause. There is in my opinion no doubt but that the primary cause was gonorrhea; the tubes while at this time practically normal in appearance, save the appearance of slight catarrhal inflammation, there being no distension of the tubes, they had been practically cured spontaneously in the course of years, but the ovaries having also become infected remained in their diseased condition, and gradually became more affected. That, although there not
by normal ovarian stroma present, menstruation continued

uninterrupted, and, in spite of such intense pathological change, there was no marked dysmenorrhea. Further it must be conclusive that the advent of acute symptoms in July was caused first by the infection of the left ovarian abscess with colon bacilli, probably simultaneously with gas bacilli; that the intense griping pain in the lower abdomen must principally be ascribed to the distension of the ovarian sac by the invasion of the gas bacilli.

III. FIBROSARCOMA. PANHYSTERECTOMY.

The presence of a tumor had been known for several years, but the patient, a nullipara 34 years old, had not been inconvenienced by it to any marked degree, until recently, when the tumor is said to have increased to double its former size in two months; besides it caused both metro- and menorrhagia. The recovery from operation was uneventful. One can, however, never be sure as to the final prognosis in such cases. To-day a patient, operated in Mt. Sinai Hospital only a few months ago, presented herself in my service at St. Mark's Hospital with an extensive recurrence.

IV. TWO INTRALIGAMENTOUS MYOFIBROMATA.

The one is particularly interesting, the patient, referred to me by Dr. S. G. Gant, æt. 35, had always had menorrhagia. The origin of the tumor was from the anterior surface of the uterus, and then it grew into the right broad ligament, filling the abdomen nearly to the umbilicus. The bladder was greatly distorted, and the operation was technically very difficult. A supravaginal hysterectomy was done. The woman died on the fifth day with the symptoms of peritonitis. No autopsy was granted. The second case was operated upon because of compression symptoms. In this instance the ureter was exposed during operation. Convalescence was uninterrupted.

V. PUERPERAL SEPSIS. PANHYSTERECTOMY.

I. L., whom I was called to see April 20th, æt. 29, married 5 years, 2 children, the last 5 days prior to consultation. Temperature at the beginning of labor 100.8; normal delivery. On the 4th day several chills with temperature of 104. The uterus was much relaxed and enlarged, but showed nothing in its interior except that so far as could be seen a grayish-white membrane covered the cervical canal. An extensive vaginal section showed the veins under the uterine border to be thickened. The abdomen was opened, and a radical operation done, resecting the greater part of the broad ligaments. Clamps were left on to shorten the surgical procedure. The pelvis was packed with iodoform gauze which was removed on the second day. A fecal fistula followed which healed spontaneously. The woman developed diphtheria a few days after operation, and was transferred to the Willard Parker Hospital, where, through the courtesy of Dr. Studdiford I was permitted to see her. She eventually made

a good recovery. Streptococci were not found in the blood, but they were found nearly throughout the uterine muscularis. The membrane in the cervix contained no diphtheria bacilli.

VI. PUERPERAL SEPTIC INFECTION. RESECTION OF PART OF THE RIGHT SIDE OF UTERUS, AND RESECTION OF THE RIGHT BROAD LIGAMENT WITH THROMBOSED VESSELS.

M. G., whom I saw through the courtesy of Dr. Brodhead. The woman 29 years old, married 11 years; seven children, the last on Nov. 21, 1904. On the day following her confinement she had three chills followed by elevation of temperature. On Nov. 24 adherent placenta remnants were removed from the right upper interior of the uterus by Dr. Dorman. The patient continued to have fever and at times slight chills, complaining also of pain in the right lower abdomen. When examined on Nov. 30, the uterus was found enlarged and relaxed in consistency. There was an indefinite fullness on the right side, which was thought might be due to a pyosalpinx. An exploratory abdominal section was done the same evening. The right horn of the uterus was found to be much indurated, the induration extending throughout the right broad ligament, the blood vessels of which were thrombosed. There was no elasticity and no area of fluctuation to be felt anywhere about the broad ligament. The right Fallopian tube and ovary were much enlarged from the infection, and intimately adherent to the posterior surface of the broad ligament. I confess that at first I did not see my way clear to benefit the patient, because of the existing thrombotic condition of the broad ligament and the seeming extensive invasion of the septic process. The left adnexa and the greater part of the uterus toward the left seemed to be normal. For this reason it was quickly decided that the process was in all probability still local, and therefore I began with the resection of the indurated part of the uterus, then proceeded outward, and resected the right broad ligament. Next to the pelvic bone, immediately above the broad ligament, a small abscess, containing about 30 c.c. of dirty sanguinous pus was evacuated; this seemed to be the limiting line of the infection. The abscess was distinctly retroperitoneal, and was lined with a pyogenic membrane. The temperature went down, and no more chills or rigors were experienced. With the exception of a small abdominal wall abscess, the recovery was uninterrupted.

VII. FIBROCYSTIC DEGENERATION OF THE OVARY CAUSING METRORRHAGIA.

A. McA., æt. 25 years, had always been regular. The present attack of bleeding had lasted 7 weeks. The interesting feature is the large size of the glands, one the seat of small cystic degeneration of the ovaries. The original size of the glands was about $1\frac{1}{2}$ inches thick and 4 inches from end to end. There was sufficient apparently normal ovarian structure at the hilus

to leave as much as the size of a normal ovary. Ovaries as large as were present in this instance from the typical small cystic degeneration have never before been met with by me.

VIII. LARGE OVARIAN ABSCESS ON LEFT SIDE; TUBO-OVARIAN ABSCESS ON RIGHT SIDE. RADICAL VAGINAL OPERATION. DEATH FROM EXHAUSTION ON THE SIXTH DAY.

M. H., seen with Dr. John Frank, æt. 34 years, never pregnant. Previous history is negative up to the present illness two years ago. The only symptoms complained of are dull pains in the right buttock, radiating to the lower abdomen, where a sore feeling is present; much flatulence. Bimanual examination shows the uterus to be immobile. The immobility is caused by chronic pelveo-peritonitis, and on the left side, high up in the pelvis, is a tumor which extends within three fingers' breadth of the umbilicus. On the right side a much smaller tumor is felt, also closely attached to the uterus. In view of the very poor condition of the patient it is thought safer to operate per vaginam. Because of the very small calibre of the vaginal canal and the inelasticity of the perineum a Schuchardt incision is resorted to, to make the pelvic contents accessible. After freeing the bladder, opening the cul-de-sac and separating the parametria on the left side, it was possible to reach the abscess, and after letting out the pus the entire sac could be enucleated. On the right side complete enucleation was not feasible. As much of the adnexæ as could be removed was extirpated, and the pelvis loosely packed with gauze. Gastric disturbance which had been present during the previous two years continued during the first three days after operation, and then the stomach began to improve so that the patient began to retain food. On the evening of the fourth day the patient's condition was so good that recovery was thought to be certain. On the fifth day the stomach again began to rebel, and the woman gradually began to fail, dying on the sixth day. The practical point of interest in this and similar cases is that an extensive Schuchardt incision will make the pelvic contents readily accessible to operation.

IX. NEPHRECTOMY FOR LARGE PYONEPHROTIC KIDNEY.

C. S., æt. 32 years, maintained that she had been well until two weeks ago. Since then there is present intense pain in the left iliac fossa. Examination showed the presence of a large tumor on the right side which after palpation and examination of the bladder was diagnosed to be a pyonephrosis. No tubercle bacilli were found. The extirpation of the kidney was unusually difficult because of very dense adhesions. No calculi were present. The kidney structure was destroyed by numerous smaller abscesses. The principal feature of interest is, if the statement of the patient is correct, the absence of symptoms referring to such gross lesion. Convalescence was uninterrupted.

X. CARCINOMA UTERI. VAGINAL HYSTERECTOMY.

J. B., æt. 23 years, married 5 years, one child. Had a ventral fixation done in Bellevue Hospital. Atypical bleeding for several months. A previous curetting by another physician improved the bleeding for a short time. The examination of the scrapings procured from a curetting for diagnostic purposes revealed adenocarcinoma. Hysterectomy on July 21st. Recovery uninterrupted.

XI. TUBO-OVARIAN INFLAMMATION ON LEFT SIDE; OVARIAN ABSCESS ON RIGHT SIDE. PANHYSTERECTOMY. RECOVERY.

A. M., æt. 27 years, married 3 years; two abortions at second and fifth month respectively. The last abortion was criminal, and the patient's illness dates from that time, namely 2½ years ago. On examination a tumor, globular in form, is found in the median line, extending about four inches above the symphysis. Its feel to the touch resembles that of a soft myoma. Operation on October 13th shows intimate intestinal adhesions, especially of the cecum, which was injured during separation. The tumor proved to be an abscess of the right ovary, evolved in the fold of the broad ligament, and crowding upon the uterus so that this organ was pushed to the right of the pelvis where it was adherent. The bladder was greatly distorted, and adherent to the broad ligament. A large rent was torn into it during separation. After seemingly insurmountable difficulties the ovarian abscess, uterus and the inflamed adnexa of the left side were extirpated. The elongated and inflamed appendix was inverted. The abdomen was closed, and drainage was through the vagina. A retention catheter was left in the bladder. Despite the complications during operation the woman made an uninterrupted recovery. The gauze with which the pelvis had been loosely packed was not removed until the seventh day. †

XII. DEGENERATING MYOFIBROMA. SUPRAVAGINAL HYSTERECTOMY.

E. G. consulted me May 19th, 1904, æt. 49 years, married 22 years, 3 children, the last 17 years ago. The patient had a large abdominal tumor which had not increased in size during the past 12 years. At that time she had consulted some of the most prominent gynecologists, and had been examined under ether, but was told that the operation for the removal of the fibroid would not be necessary, because at the climacterium it would probably decrease in size, and the metrorrhagia of which she complained would then cease. Further, that the operation for its removal would be so serious that she would probably die as the result of it. During the past few months the patient had, however, become so weak, and so much pain was present in the abdomen that she could not bear it. Gastrointestinal disturbance and cardiac palpitation had become prominent additional

symptoms. The diagnosis of degenerative changes was made. This diagnosis was subsequently corroborated. A cachetic appearance of the woman was marked. Operation revealed many intestinal adhesions. The patient has now fully regained her health; all former symptoms have disappeared.

DR. H. N. VINEBERG.—I should like to ask Dr. Boldt if, in the case diagnosticated as cirrhosis of the liver, there were any symptoms which pointed to the true condition?

DR. GEORGE L. BRODHEAD.—In the case of puerperal sepsis noted by Dr. Boldt the medical attendant saw the patient for the first time when the head was on the perineum, and birth of the child occurred a few minutes later. The placenta and membranes were apparently complete. The patient, however, soon ran a septic temperature, and was brought to the hospital. Dr. Dorman removed a small amount of what appeared to be placental tissue from the region of the right horn of the uterus, but the woman continued to run a septic temperature, and, as she had pain in the right side, intense and continuous, Dr. Boldt was asked to see her, and he decided upon operation. This was rather an obscure case because she had suffered from pain on that side for many months during her pregnancy. It was thought that she might have had a pyosalpinx, but that was proven not to have been the case. This certainly was a very interesting case, the broad ligament alone being involved.

DR. J. RIDDLE GOFFE.—What day after delivery was the curetting of the uterus done?

DR. BRODHEAD.—The curetting was done on the third day after labor, and the placental detritus was found near the right horn, this being the side on which the broad ligament was involved.

DR. H. N. VINEBERG.—I am gratified to see that Dr. Boldt is following the steps which I vigorously advocated and which he as vigorously combated two years ago. I think he is to be congratulated upon his success. Dr. Boldt did the proper thing, cutting open the abdomen to ascertain what the condition was, knowing that the local remedies and palliative measures were not sufficient. In 98 per cent. of the cases I come across they get well without serious operative interference; but the other 2 per cent. may require serious surgical intervention, and should be treated on surgical principles such as apply to septic lesions in other parts of the body.

DR. HERMANN J. BOLDT.—In answer to Dr. Vineberg I would say that the patient did at times have abdominal pain located more in the centre of the abdomen, but which soon passed away. It was described as being due to some intestinal derangement. She went on for weeks with such pains, and I believe they can be ascribed as being due to partial separation of the placenta taking place from the intestines at times, with the consequent bleeding.

DR. GEORGE L. BRODHEAD.—If the Chairman will allow me I should like to ask the Society the following question; If a patient

had a still birth at the seventh month without any known exciting cause, and nothing was found wrong with the child or the cord, and on careful examination of the placenta a very marked fatty degeneration was noted, would it be justifiable to induce labor in subsequent pregnancies about the eighth month in order to avoid this same occurrence?

DR. AUSTIN FLINT, JR.—I think this is too general a subject to discuss except by going into the cause of the fatty degeneration. It is well known that fatty degeneration does occur normally at the end of pregnancy, and this might have been an exaggeration possibly of the normal condition, unless there was some underlying systemic cause requiring systemic treatment, such as syphilis. These cases are always obscure, and it is very difficult to make a diagnosis. In this connection I remember the case of a woman who gave birth to five or six still-born children, and all at term. She was sent to me with the idea of trying to deliver her a little before term. Her history was carefully taken, and absolutely no reason was found for her giving birth to still-born children. She went on to full term, and gave birth to a normal child, and had perfectly normal placenta. When a patient has given birth to a still-born child but once I do not think it is justifiable to induce labor before term. The cause which existed the first time might not exist the second time.

DR. MALCOLM McLEAN.—I have seen a number of such cases, still births occurring at the seventh or eighth months, and I must say that, in the majority of cases, I have been persuaded that there has been a syphilitic taint, although it was impossible to get such a history. In these cases iodide of potassium has served me well; not with uniform results, but nearly so, and it has proven my point. I have in mind one case of a lady living in my neighborhood who had been in the hands of four different physicians at four different times; each time she lost her child from full term to the seventh and a half to the eighth month. Her last confinement I saw, and noticed the same condition of placental degeneration. Her doctor told me her history was a negative one, but I told him I cared nothing about the history, and placed her upon iodide of potassium in her next pregnancy, and pushed it as though I knew it to be a syphilitic case. The result proved the correctness of my belief, her confinement taking place in the middle of the eighth month; the child lived a few days and then expired. The placenta was badly degenerated. The treatment in this instance was started late in her pregnancy. The next time I urged my belief strongly upon the doctor, and with perfect results, she having borne two healthy children since under such treatment. I have had that experience a number of times, and I am strongly of the opinion that the degeneration is often due to some distinct syphilitic taint, and if the patient be treated with iodide of potassium she will do well.

DR. J. RIDDLE GOFFE.—How large a dose do you give?

DR. MCLEAN.—Five or ten grains four times in twenty-four hours, and I find they stand such dosage wonderfully well.

DR. GEORGE L. BRODHEAD.—How early do you commence giving this drug?

DR. MCLEAN.—I begin in the first month of pregnancy, giving five grains three times a day so long as there is no iodism.

DR. J. D. VOORHEES.—I have in mind a patient of mine, who was 42 years old, who had four macerated still-born babies between seven and a half months and term, and who consequently was very anxious for a living child. I assumed that she had some old syphilitic taint and placed her on iodides, but did not continue them very long. I gave her ten grains of sodium iodide three times a day for two weeks, then omitted the dosage for another two weeks, then started it again, and so on until two weeks before term, when I induced labor. As a result she gave birth to a boy baby weighing nearly seven pounds. The placenta had already begun to show signs of fatty degeneration, and for this reason I was very glad I started the labor. The baby lived and did well. The child is now three years old.

DR. RALPH WALDO.—In many cases syphilis has been contracted by one method or another, and the individual is ignorant of it. A negative history is of little if any importance.

DR. H. N. VINEBERG.—I should also like to ask a question. Is it probable that a woman who has had a number of children, healthy and well, should have a still birth from mere fright or from emotional causes? I have recently had such an experience. A woman had had seven or eight children, perfectly healthy. One or two weeks before the expected term she became much frightened. Shortly afterwards she said she no longer felt life. At the expected term labor set in and she gave birth to a dead child. There had been absolutely no suspicion of syphilis, although we must bear in mind that extra-genital cases do occur. I had a first class pathologist make a post-mortem on the fetus and examine the placenta very carefully, and absolutely no changes could be found to account for the still-birth. The only thing that could be made responsible for it was the fright she had in the kitchen by her clothing catching fire and badly burning her hands. She was told, too, shortly after, that her child had been taken with diphtheria. I wonder if these were sufficient to cause death of the child two weeks before full term?

DR. GEORGE L. BRODHEAD.—This subject is one of great interest to me. Many children are born every year at the sixth or seventh month with marked fatty degeneration of the placenta. This subject is fresh in my mind because only three days ago I saw a patient in my office for the first time; she was about seven months pregnant and had not had a pain or a sign of impending labor. Close questioning a little later elicited the fact that the membranes had probably ruptured the night before. When I made an examination I found the cervix dilated sufficiently to admit two fingers, and had I wished to could have stretched it to admit

four fingers without any exertion. She was immediately placed in bed. Yesterday morning she began to have labor pains, and yesterday afternoon she was delivered of a still-born child after a normal labor. She had felt fetal movements thirty-six hours before delivery and two days before I had heard a strong and regular fetal heart. I wondered what the sentiment of the society would be regarding this induction of labor in a subsequent pregnancy. What Dr. McLean said regarding the use of iodide of potassium was excellent. Although there may be no history of syphilis, I believe it to be a good plan to give iodide of potassium in subsequent labors.

DR. HIRAM N. VINEBERG reported two cases of

ACUTE CHOLECYSTITIS IN THE PUERPERIUM SIMULATING PUERPERAL SEPSIS, CHOLECYSTOTOMY, RECOVERY.

It is rather singular that so little has been written on cholecystitis in the puerperium. In looking through a number of works on obstetrics, both recent and ancient, I find the subject mentioned in only two: P. Müller, Band II, p. 918. Schauta. *Lehrbuch der Gesamt-Gynäkologie*, Wien, 1896, p. 631.

Schauta covers the subject in six lines and Müller in five lines. Schauta says pregnancy and the puerperium seems to favor the formation of gall stones. He quotes Thiriar from an abstract in the *Berl. Klin. Woch.*, 1885, No. 48, who stated that he had seen a case of cholelithiasis during pregnancy of such severity that he was compelled to perform cholecystectomy, and Schauta adds that he himself had seen a case of biliary colic in the fifth month of pregnancy with such severe symptoms that he considered cholecystectomy indicated. After a careful search of the literature for the past ten years, I found the report of only three cases of cholelithiasis and cholecystotomy in the puerperium (Potocki, A. Pinard, A. Eiermann) and two such cases in pregnancy (Van Engelen, Doleris).

During the past summer it was my good fortune to be called into consultation in two instances in which I made the diagnosis of acute cholecystitis and the diagnoses were verified by subsequent operation. In both cases the attending physician had previously made the diagnosis of puerperal sepsis.

CASE I.—*Acute Cholecystitis Nine Days after Delivery, Cholecystotomy on the Twelfth Day. Recovery.*

On July 30, 1904, I was asked by a physician to see in consultation a patient in the down-town district, who had been delivered twelve days before, and who was now suffering, the physician thought, from puerperal sepsis. The patient was 31 years old, had been married 10 years and this was her fifth child. The labor had been normal, but took place amid unsanitary surroundings, and with as imperfect precautions regarding asepsis as usually obtain in such homes. The woman seemed fairly well for the first nine days, and apparently had no temperature. On the ninth day of the puerperium she was seized with rather severe

pain in the abdomen, the temperature went up to 103, pulse 120. She had no nausea nor vomiting. The abdominal pain and fever persisted until I saw her. At my visit I found a large and stout woman with a heavily coated tongue and a considerably distended abdomen. Her breathing was rather short and jerky. The first impression she made was that of one suffering from acute puerperal peritonitis. On questioning her she stated that the pain was all over the abdomen and that she had not had any movements of the bowels for two days, although several efforts had been made to move them both by purgatives and enemata. A bimanual examination found the uterus in a normal state of involution for that period of the puerperium and the adnexa apparently normal. No exudates nor swellings were found in the pelvis. I extended my examination to the abdomen. It was considerably distended and fairly rigid, especially on the right side. The rigidity seemed most marked in the right hypochondrium, and here also was the greatest tenderness. By direct interrogation I learned that the pain was most severe at this point, and on further interrogation the husband stated that his wife had been subject to attacks of "cramps in the stomach" for several years, and that frequently during these attacks a ball would appear in the epigastric region which he would rub away. As far as either husband or wife knew these attacks were not attended or followed by jaundice. The patient showed no evidences of jaundice at the present time. I made the diagnosis of acute cholecystitis, rather to the surprise and relief of the attending physician. The patient was taken at once to Mt. Sinai Hospital, where on the same night I performed cholecystotomy. The gall-bladder was very much distended, was the size of a medium sized pear and contained some free pus and dark colored bile with numerous small stones. Temperature fell to normal on the third day after operation and the recovery was rapid, the patient leaving the hospital on the seventeenth day. The fistula closed in about six weeks. Latterly the patient has been complaining of considerable discomfort in the epigastric region, but has not had any distinct attacks of pain.

CASE II.—Cholecystitis Ten Days after Delivery...Cholecystotomy on the Same Day. Recovery.

About two months after (October, 1904) I had seen the first case I was requested by a physician to see a patient who was suffering, as he thought, from puerperal septic infection. He had delivered the patient, a primipara, 20 years of age, 10 days before. The placenta was adherent and the doctor had to remove it manually, otherwise the labor was normal. The puerperium seemed to have progressed normally until the morning of the day I was called, when the patient was seized with a severe chill, followed by fever and pain in the left *iliac* region. After a few hours the pain spread over the entire abdomen and was most marked in the right half of the abdomen. I saw the patient at 4 p. m. She appeared to be very ill, had a dry, coated tongue and a temperature of over 103 degrees and a pulse of 120. The abdomen was not

distended, but was rather rigid, especially in the right umbilical and hypochondrial regions. There was an area of decided tenderness in the region of the gall-bladder, and it appeared to me as if I could make out an ill-defined mass in that region. On bimanual examination the uterus and adnexa did not show any abnormality, the uterus being in the usual degree of involution for that period of the puerperium. There were no wounds in the vagina and the slightly torn perineum looked healthy. I unhesitatingly made the diagnosis of acute cholecystitis, notwithstanding the fact that the patient stated positively that she never before had had any attacks of pain in the epigastric or hypochondrial regions, and that she had always been healthy. There was no nausea nor vomiting, and there were no evidences of jaundice.

I had considerable difficulty in convincing the attending physician, and another consultant who was present, that we had to deal not with a case of puerperal sepsis, but with an acute affection of the gall-bladder.

The patient was at once removed to Mt. Sinai Hospital, where a few hours later I performed cystotomy. The gall-bladder was very much distended, being the size of a large pear, and its walls were considerably thickened. It contained very little pus, being filled chiefly with a thick, dark fluid and numerous small stones. The temperature fell to normal on the third day, and convalescence was somewhat protracted by rheumatic pains in both legs. The patient left the hospital four weeks after the operation. The fistula persisted for some weeks after the operation but closed rather promptly after the discharge of a small calculus.

Taking into consideration the frequency with which women suffer from gall stones, and bearing in mind the statement made by some authorities that pregnancy and labor favor the occurrence of biliary colic, acute cholecystitis in the puerperium ought to be a more frequent occurrence than the literature would seem to warrant. It is probable that the disease is often overlooked or is mistaken for puerperal sepsis. The case reported by Pinard was mistaken for puerperal sepsis until the tenth day, when accidentally a lump was detected in the right hypochondrium. Huchard (*Arch. de Tocologie*, 1882) reports some interesting cases in which a similar event was noted, but in none of the cases was the diagnosis verified by opening the gall-bladder.

SHALL GALL-STONES OR OTHER PATHOLOGICAL CONDITIONS IN THE ABDOMEN BE TREATED WHEN OPERATING FOR PELVIC DISEASE?

DR. BROOKS H. WELLS.—In asking me to introduce the argument on this subject your president wisely requested that my remarks be confined to a period of ten minutes and be restricted to a consideration of the appendix and gall-bladder, and accordingly, aside from calling attention to possibilities, other organs will not be discussed.

Some years ago I performed a supravaginal hysterectomy upon a young woman for the removal of a fibroid uterus, and

shortly after her convalescence from this had to subject her to a second operation for the removal of an acutely inflamed appendix. Not many months later a second case required operative relief from symptoms caused by that same troublesome bit of intestine and a third developed an obstructive cholecystitis. These experiences, which must be common to all of us, caused me to make a practice of examining the appendix whenever I opened the abdomen for pelvic disease and where I felt the examination and removal of the appendix could be done without materially increasing the risks of the patient's recovery. A fairly large number of appendices were removed in this way without mortality, and, indeed, without materially increasing the discomfort incident to an ordinary convalescence from an abdominal operation. Fully half the appendices removed showed gross evidence of disease. Increasing experience only confirms my belief in the wisdom of the removal.

In a case without pus the primary operation is usually completed first, and then, if thought best, the appendix is sought for and exsected. In a pus case the condition of the appendix should be determined before any of the pus cavities are touched unless the case promises to be so serious that any extra manipulation must be avoided.

In cases requiring only a short incision, make the opening a little to the right rather than to the left of the linea alba to facilitate the search for the appendix. In general in its removal the simplest technique gives the best results, though one must often modify his method to suit the conditions found.

Having strong convictions that it is most wise to avoid by every possible means any handling of the peritoneal surfaces other than those directly and necessarily concerned in the operative procedure for which the abdomen has been primarily opened I for a long time refrained from any more extended examination of the abdominal contents, but in the autumn of 1901 a patient was sent me for operation for the relief of symptoms caused by a retroverted and adherent uterus. This patient had also suffered from a persistent discomfort in the epigastrium with nausea, which her physician had vainly treated as dyspepsia. There was no physical evidence of biliary trouble other than the marked malnutrition but, as we have learned to look on symptoms like those noted as strongly pointing towards some infection of the biliary tract, after making the abdominal incision I passed the gloved hand up over the omentum to the gall-bladder and discovered a mass of biliary calculi. These were removed through a second incision after the retroversion had been corrected, and the patient was permanently relieved of all her symptoms and became fat and strong.

Since that time I have made it a practice to palpate the gall-bladder through the pelvic incision in cases where the patient gave a suggestive history or physical signs such as tenderness to pressure over the region of the gall-bladder, provided always that

I thought it could be done without too much added risk. In this way several instances of only suspected biliary troubles have been certified and operated upon with very gratifying results.

The maneuver for examining the biliary tract, or more strictly the gall-bladder, can be accomplished whenever the indications are present and the pelvic incision is made long enough to admit the hand. This search should always be at the beginning of an operation, as there seems then less risk of an accidental infection. The aseptic, gloved hand, wet with warm normal salt solution is passed, palm upward, between the belly wall and the omentum high enough to allow the necessary examination to be easily made.

Through the ordinary median suprapubic incision made long enough to admit the hand, not only the pelvic region, the appendix and the liver, but the kidneys and ureters, the lateral region of the abdomen, the stomach, the spleen, the sigmoid, may all be palpated with considerable facility and with a minimum of harm by any one who carries a clear mental picture of the relations of the omentum and the various fossæ of the abdominal cavity and who with aseptic gloved hand wet with normal salt solution carries out the necessary manipulations with gentleness and dispatch.

I wish only to call attention to these possibilities, and do not wish to be understood as advocating the use of this extended manipulation of the abdominal contents in every case or, indeed, in any but the exceptional case, and then only after the careful consideration of the history and the subjective and objective symptoms of the patient have led to a suspicion of possible but undefined trouble in one of the abdominal organs other than that for which the primary incision was made.

Within the time limit set for this discussion it is impossible to go into the voluminous literature of the surgery and pathology of the biliary tract or of the appendix, but as especially bearing on this discussion I would like to call attention to the valuable papers of J. S. Clark on "Unsettled Questions in Abdominal Surgery" and on the "Treatment of Gall-Stones Found as a Coincident in Abdominal or Pelvic Operations," as well as to a previous paper by Howard Kelly. These authors with myself and others, hold that an infected gall-bladder is coming to be more and more feared as a possible and frequent cause of other and serious terminal infections, and that because of this fact and the small mortality following early operation it as well as the appendix should be surgically treated whenever its infection is recognized.

To summarize, my position on the two points at issue is as follows:

1. In every abdominal operation where the incision allows access, where the patient's consent can be obtained or where a pathological condition is found and where the general and local conditions allow it without appreciably increased risk to the patient, remove the appendix.

2. Where a careful consideration of the patient's condition leads

one to suspect the probable existence of disease of the biliary tract it is advisable to palpate these structures through an incision made for the primary purpose of treating definite pelvic disease. If calculi or other definite pathological conditions are recognized they should be treated at the same time or at a subsequent operation as the surgeon may find advisable.

DR. HERMANN J. BOLDT.—The position that Dr. Wells takes, it seems to me, every one should take; his contribution is an exceedingly important one. I have never had the opportunity to operate upon the gall-bladder when I purposed to operate for pelvic lesions. If, however, a patient should complain of symptoms which would lead me to suspect some disease of the gall-bladder I would invariably palpate and examine that organ. So far as the appendix is concerned I invariably invaginate the appendix in every instance unless there are distinct contra-indications. I think it is wrong for a surgeon to open the abdomen for other purposes and *not* to do away with the appendix unless there exist positive contra-indications for so doing. A short time ago I devised a little instrument to facilitate this invagination of the appendix. It consists of a surgical probe with a small steel thorn, one millimeter in length, which catches in the end of the appendix. If the appendix is not obliterated at the distal end it can be readily invaginated with this little device; then a single suture, which has previously been used to ligate off the meso-appendix may be used to close off the opening caused by the invaginated appendix. The rule Dr. Wells gives, always to examine the gall-bladder if symptoms are present, leading one to suspect disease of the gall-bladder or ducts, and interfere surgically if necessary, I believe to be a good one.

DR. J. RIDDLE GOFFE.—I think it would be interesting and instructive if each member would give in the course of his discussion an answer to each of the following questions: (1) Is it your custom, when performing abdominal operations, to always examine the appendix? (2) Do you remove it if diseased? (3) Do you remove it if it is not diseased?

DR. JOSEPH M. RECTOR of Jersey City, N. J.—It has been my custom in abdominal operations, if I have time and the patient's condition permits, to always remove the appendix. I believe it to be a source of danger. If the patient is able to stand the extra five or ten minutes necessary to remove this organ, it is always best to remove it.

DR. J. D. VOORHEES.—If I find that the appendix is diseased I would remove it; if it is not diseased I would leave it alone.

DR. HOWARD C. TAYLOR.—I examine the appendix carefully in every case and, if the patient's condition can stand it, even if apparently normal I remove it. I do not examine the other organs of the abdominal cavity unless there exist symptoms which point to diseased conditions.

DR. J. LEE MORRILL.—I have seen the appendix removed in

many cases when it was normal and I have never seen any bad effects follow from so doing.

DR. MALCOLM MCLEAN.—I let alone all the other organs that are not involved. I do not look for troubles; I usually find enough when operating upon the case and for the condition I am called upon to operate for. I generally take this opportunity to look at the appendix, but I certainly never interfere with it unless it is diseased.

DR. RALPH WALDO.—I invariably examine the appendix and if I find anything abnormal operate upon it. It has always seemed to me that surgery could not improve upon normal conditions; therefore, I do not remove a normal appendix. If there have been symptoms which point to disease of other organs I examine them and, if necessary, operate.

DR. GEORGE L. BRODHEAD.—In all cases where the condition of the patient warrants the operation the appendix should be removed.

DR. R. B. TALBOT.—In every abdominal operation I always make it a rule to remove the appendix if possible. I never perform a laparotomy without first asking the patient if she wishes the appendix removed; almost invariably she seems to be glad to have it removed.

DR. G. G. WARD, JR.—The position taken by Dr. Wells is the sound and proper one, and I agree with him theoretically. I always examine the appendix whenever I possibly can, and I am inclined to take it out whether diseased or not diseased in every case, if the operation has not been very prolonged, and the patient's condition permits. So far as my asking the patient if I may take the appendix out it has been my experience that the patient frequently of her own accord asks me to take it out.

Regarding the examination of other organs I believe that if symptoms point to involvement of them that it is our duty to make an investigation while we have such an excellent opportunity. *Apropos* of this I recall the case of a woman whom I operated upon for diseased appendages and who had complained of great pain in the region of the spleen. She was very stout, and it was not possible for me to feel any growth before the operation. After finishing the operation on the appendages I passed my hand up and found a cystic growth the size of an orange, which seemed to be attached to the left kidney. Some months later, when the condition warranted it, I removed this growth, which proved to be a large polycystic kidney.

DR. J. G. HIRONS.—My custom has been to remove the appendix if the patient's condition will permit it, and limit further examination of the abdominal organs to previous indications.

DR. JAMES N. WEST.—In my early experience I never removed the appendix unless I saw evidences of disease; but as time went by I have become accustomed to remove it more and more frequently because oftentimes disease, not evident at the time of operation, has developed later. I have frequently had patients operated upon for

some other troubles develop appendicitis. Whenever the condition of the patient permits, I remove the appendix, whether diseased or not. If abdominal symptoms point to any diseased condition outside of region in which I am operating, I always take advantage of the opened abdomen and palpate that organ.

DR. A. PALMER DUDLEY.—I should like to ask where is the man who is an up-to-date surgeon, who will open the abdomen to treat any form of pelvic disease and who will not remove the appendix? He is not in this Obstetrical Society. If the gall-bladder is diseased he must attend to it; if there are other forms of disease noted other than that which he is operating for, if the patient's condition will permit, he must attend to it as well. We must progress and not go back. We understood this years ago. If we are doing pelvic work by the suprapubic route, we must attend at the same time to the other diseased organs. To-day I never close an abdomen without investigating the conditions of the liver, the gall-bladder, the spleen, and other organs, and I have good witnesses here to-night, who will state that this is a good plan. Every man in this room should do just what his knowledge commands him in such cases; otherwise he will be caught a little later.

DR. MALCOLM MCLEAN.—I maintain that one must be guided by his personal experience. I have practised evidently what is not done by the majority here to-night, conservatism in leaving the appendix very much alone. You have referred to the results of your practice. For over twenty years I have opened the abdomen seriously and scientifically, and I have yet to see the first case of disease attacking either the gall bladder or appendix in any patient upon whom I have operated.

DR. WILLIAM S. STONE.—There is no rule that I carry out in all cases; I have taken the appendix out on several occasions, by request of patient, when operating for pelvic conditions and, provided the patient's condition is good, I usually take it out, especially in those cases in which the appendix is adherent to the tube or ovary which I am removing. Yet I would not say that it is necessary to remove the appendix in every case when operating for pelvic conditions.

DR. J. RIDDLE GOFFE.—I noticed recently that an English writer has advanced the idea that the appendix is an important organ in the process of digestion, completing the final transition of recalcitrant substances; and he makes the point that the appendix is the home of certain bacilli which are important in this function. He has not as yet demonstrated this belief to be a fact, and he has not urged that this be accepted entirely. I have never been able to relieve my mind of the belief that the appendix is of some value to the animal economy. When it is in a healthy condition it is not my custom to interfere with it. But if I find bands of adhesions around it, or points of constriction, or other marks of disease, my rule is always to remove it whenever I open the abdomen. I have had the same experience as Dr. McLean has; in no instance in

which I have operated for pelvic disease have I known of one suffering from any trouble with the appendix afterwards. The fear of trouble with the appendix following operations upon pelvic organs has been rather exaggerated. Of course, we all know that the large majority of people go through life without any trouble whatever with their appendices; I certainly would advise against interfering with it when healthy.

It has not been my custom to explore the abdominal cavity as carefully as Dr. Wells suggests. I am very careful, however, prior to operation to get a complete history to determine whether there are symptoms present which point to disease of other organs; if such symptoms are present I then examine carefully and do further work if demanded; otherwise I never pass by hand into the abdominal cavity for the purpose of further exploration.

DR. BROOKS H. WELLS.—I am pleased at the extensive turn the discussion has taken this evening. Personally, I believe the appendix is not a valuable functioning organ, but only an evolutionary remnant. If you will consider its comparative anatomy and trace it from the lower mammals up to man, you will find that all possess more or less an appendix. In the lower mammals the appendix is large, richly endowed with glands, and an important part of the alimentary tract. In the kangaroo the appendix is a big digestive storage sac. As we ascend the scale of mammalian life this part of the intestinal tract becomes smaller and smaller, less richly furnished with glands, and in the anthropoids it has nearly reached the state where, as in the human being, it becomes a useless appendage, without doubt undergoing an evolutionary atrophy. So I feel certain that we are not doing our patients any harm by removing what some claim to be an important functioning organ. If the surgeon possesses proper surgical skill, and if the patient's condition permits, I believe the appendix should be removed in all cases when we open the abdominal cavity.

With regard to what has been stated by some to-night that they never have had any trouble with the appendices not interfered with during abdominal operations, that has not been my experience. I have now a case, operated upon some time ago for pelvic trouble and the appendix left *in situ*, with a diseased appendix. Another recent case developed an acutely inflamed appendix which had to be removed. I always feel that after surgical invasion of the lower abdominal cavity, there is an increased risk of future appendiceal inflammation.

Dr. Boldt brought up a point in regard to his technique in removing the appendix. For my part I am afraid to invaginate the appendix with all its coats intact. One should bear in mind that there is a little artery which runs close to the appendiceal junction which may be sufficiently large to nourish the issues; if you invaginate the appendix with coats intact you run the danger of forming later an intracecal cyst. Recently a case has been reported in which the appendix was invaginated; a second operation disclosed a resulting cystic tumor. So, when invaginating the ap-

pendix, I think it is of advantage to strip off the outer coat. My practice is to circumcise the appendix about three-eighths of an inch away from the cecum, going through the outer coats only; then I peel the fibrous from the mucous coat, a thing easily done in the majority of the cases if there is no stricture of the organ. The mucosa is then easily inverted. Instead of using a special probe for this purpose, take a long curved needle, and, using the head of it, the whole thing can readily be invaginated. Take a single purse string suture about one-quarter of an inch away from the root of the appendix, and as the appendix is turned in tie this purse string tight. If this procedure is not practical, tie off the mesentery, ligate the appendix, cut it off, cauterize the stump with carbohc acid, and drop it into the abdomen. No harm results and no adhesions form.

Regarding what was stated about examinations of the gall-bladder, I think no one should make a systematic examination of the abdominal contents with the hand every time he opens up the abdomen. This extended examination should only be made when it seems necessary to aid in clearing up some obscurity. In 24 abdominal operations performed by me since November 1, I have only thought it necessary to examine the gall-bladder on two occasions. In one I found calculi; in the other I found nothing. It is rather curious to refer to a case that happened at the Polyclinic; a woman was operated upon for pelvic disease and as she, at no time, gave any history or signs of gall-bladder trouble, no intra-abdominal palpation was done. She made a perfect recovery from the pelvic operation, but two weeks after she had a typical attack of gallstone colic. This might have been prevented if the gall-bladder had been examined at the time of operation.

DR. H. N. VINEBERG.—I think our treatment of the appendix ought to depend largely upon whether we are dealing with hospital or with private patients. In hospital cases, whenever I open the abdomen and find the appendix within reach, I always take it out whether diseased or not, providing the condition of the patient warrants it. In case of a private patient the matter of removing this organ should always be talked over beforehand. Supposing you removed an ovarian cyst and the appendix and the patient died; how are you going to positively tell the friends that the patient did not die from the appendicular operation but from the effects of the removal of the cyst, and the family might purposely blame you for contributing to the death of the patient by taking out a healthy appendix. This is a point that, I believe, should be considered. One should always tell the patient's family that there is *some* risk, although not much, in removing the appendix. The appendix should be removed with as much care as is taken in the removal of other organs.

Regarding the examination of other abdominal organs than those for which the operation was intended, I agree with the reader of the paper with certain reservations. One must bear in mind that the diagnosis of lesions of organs by mere palpation through a

distant incision had very definite limitations. Supposing a patient came to you with a retroverted uterus and adherent and diseased adnexa, and complained of pains in the back, loins, and the epigastrium. By palpating the gall-bladder and the kidneys through the suprapubic incision can you positively state that those organs are perfectly healthy? The gall-bladder may contain large number of calculi, and if it is distended with bile, as it usually is, all you may be able to palpate will be a distended viscus, which may be full of calculi or not, for all you can tell. I have frequently seen the gall-bladder cut down upon and the operator could not tell until he opened it whether or not it contained calculi. Again, the bladder may not contain any calculi, and the trouble may be due to a calculus in the cystic, hepatic, or common duct. The same applies to the kidney. How often does it happen that after the operator has exposed and delivered the kidney through the incision he is unable to tell whether a small stone may not be situated in the pelvis. He may have to needle the organ or even be compelled to bisect it before the true condition can be ascertained. How often again do tuberculous kidneys manifest the process by the presence of a small abscess in the interior of the organ which it would be a physical impossibility to detect by palpation through the suprapubic incision. Just think how misleading to you and to your patient it would be after such an examination to assume positively the correctness of your diagnosis. I maintain, therefore, that such examinations have a very limited usefulness, and when one does resort to them he should constantly bear in mind these limitations and the danger of being misled by them.

DR. BROOKS H. WELLS.—I did not mean to have any one understand me as stating that intra-abdominal palpation was always a positive means of diagnosis. Before resorting to palpation we should first resort to other diagnostic means, taking a careful history, making a careful physical examination. Palpation is simply an additional aid where the diagnosis has been in doubt.

TRANSACTIONS OF THE CHICAGO GYNECOLOGICAL SOCIETY.

Meeting of December 16, 1904.

The President, DR. J. CLARENCE WEBSTER, in the Chair.

MYOFIBROMA OF THE ANTERIOR CERVICAL WALL.

DR. E. C. DUDLEY.—I have here a specimen removed from the cervix uteri by Dr. Jones of Utica, New York, who kindly sent the specimen to me because it appeared to raise the question as to whether it was extreme hypertrophy of the anterior lip of the cervix uteri or a new growth. Microscopic examination made by Dr. Dagg, pathologist at St. Luke's Hospital, shows the tumor to be almost entirely made up of smooth muscle fiber, with large well-staining nuclei, in parallel arrangement, although in some places the bundles of cells are interwoven and run in different directions as indicated by the nuclei being cut transversely, semi-transversely as well as longitudinally. The growth has very poor blood supply, and a very deficient sometimes absent connective tissue frame work; it is therefore not hypertrophy but a myofibroma. The growth is four inches long, and in form and relations to the uterus would strongly suggest the idea of hypertrophic elongation. Emmet and others have denied the possibility of extensive hypertrophy of the infravaginal portion of the cervix, and Dr. Jones thought that this might possibly be a rare exception to the general rule. I have in the course of my experience run down a number of cases of supposed hypertrophic elongation of the infravaginal portion of the cervix, and in every instance the investigation has supported the declaration of Emmet that the condition is practically unknown. For my own part, I have never seen extreme hypertrophy of the infravaginal portion of the cervix uteri, and while I would not make the absolute statement that such a thing never occurs, I am yet satisfied that it is so infrequent as to be practically almost out of the question. The microscopic slides of this specimen are before the Society for examination.

DR. T. J. WATKINS.—I am very much interested in this specimen because I operated on a case somewhat similar to this one a week ago. The patient was about 20 years of age, and had never been pregnant. The cervix presented about one and a half inches beyond the vulva. There was no prolapse of the body of the uterus. The patient also had a tubo-ovarian abscess. The cervix was about four inches long, and the body of the uterus one inch to one and a half inches in length. It was impossible to find any cause for this elongation of the cervix, and the literature in regard to hypertrophy of the cervix gives very little

information as to the etiology. It is difficult to say what starts the elongation. After the elongation once begins, the cervix containing a large number of blood vessels, its weight is increased, and the increased weight will rapidly increase the elongation.

DR. JOSEPH B. DE LEE.—With reference to the etiology in Dr. Dudley's case, I might call attention to those cases in which there is an acute enlargement and prolapse of the cervix during pregnancy. A patient of mine states that she received a physical shock, and shortly after, a tumor appeared at the vulva, which proved to be the elongated cervix, and the uterus was at its normal site. Under rest in bed the tumor disappeared and gave no further trouble for two months, when, under a similar strain, the cervix swelled up again, and appeared outside the vulva, but became reduced in size under the same treatment of rest.

SECONDARY CARCINOMA IN THE SCAR OF AN ABDOMINAL WOUND
FOLLOWING HYSTERECTOMY FOR CARCINOMA OF THE CERVIX
UTERI.

DR. T. J. WATKINS.—The first specimen which I wish to present is one of secondary carcinoma in the scar of an abdominal wound following hysterectomy for carcinoma of the cervix uteri. The patient, Mrs. V., was referred to me by Dr. A. H. Burr. A combined vaginoabdominal hysterectomy was made June 13, 1904. The carcinoma was thoroughly curetted and cauterized before removal to diminish the dangers of infection. Recovery was uneventful. The abdominal wound healed without supuration. The vaginal wound suppurated slightly, but apparently healed well. In August—two months after operation—a small nodular growth was observed in the abdominal scar. On August 29, 1904, this nodule, which was about one-half inch in diameter, was excised. The growth had developed in the skin and subcutaneous tissue, but was entirely external to the fascia. The tissue beyond the nodule was healthy. The wound healed by first intention, and there is no indication of return of the growth in the abdominal wall. Pelvic examinations in August and September showed no indication of return of the carcinoma. A recent letter from the patient's physician indicates that there is return of the carcinoma in the vaginal scar.

Sections of the nodule which are exhibited under the microscope show carcinoma.

In this case the secondary growth is probably due to transplantation of the carcinoma cells. If carcinoma is caused by an organism, the case may be one of infection. The relation of the tissues involved in the primary and secondary carcinomas would probably exclude extension of the disease through the lymph or blood vessels.

In this connection the following case is of interest: Dr. Barnes and I operated on an advanced case of carcinoma of the uterus. There was an early recurrence. The patient's husband nursed

her. He had a mole on his forearm, which became cancerous, and he died from carcinoma before the illness of his wife was fatal. There is little doubt but that the carcinoma of the arm was the result of transplantation or of infection from his wife.

RELATION OF OVARIAN ABSCESS TO TUBAL ABSCESS.

DR. T. J. WATKINS.—I have here a specimen that is not specially unique, but it is interesting in that it shows beautifully the relation of an ovarian abscess to an abscess in the tube. It is not often that one finds such a well-marked connection between a pyosalpinx and an ovarian abscess. One still hears a good deal about pseudo-tubo-ovarian abscesses, and reads of them in the literature. It is not very important whether these abscesses are true tubo-ovarian or pseudo-tubo-ovarian.

The specimen illustrates a very important point in the diagnosis, as this case before operation could not be distinguished from a fibroid tumor, with infection and adhesions. The abscess and the uterus were so intimately related that it was impossible, even under an anesthetic, to distinguish the uterus from the abscess. Even after opening the abdomen the uterus was not distinguished from the abscess, until a study was made of the relation of the round ligaments and tubes to the tumor.

DR. J. CLARENCE WEBSTER.—I would like to ask Dr. Watkins if in the first case he remembered touching, perhaps by mischance, the abdominal wound in any way with the uterus, as it was drawn out?

DR. WATKINS.—The contamination was easily accounted for in that case, because in separating between the uterus and bladder the carcinoma was entered. The tumor was delivered through the abdominal wound, as the cutting away and cauterizing from below was thought to be sufficient to exclude the danger of infection.

DR. GEORGE SCHMAUTH.—I do not quite understand the relation between carcinoma in the woman and her husband, and I would like to hear the views of the members as to whether or not carcinoma has developed from a mole.

DR. WATKINS.—Dr. Schmauth did not exactly understand what I said. I stated that in all probability there was a transplantation of carcinoma cells. However, there is a possibility that there might have been infection.

DR. SYLVAN KUNTZ presented the report of a case of

RUPTURE OF EXTRAUTERINE PREGNANCY DURING CHLOROFORM ANESTHESIA.

Mrs. X., aged 24. Past history: negative up to her 15th year, when she began to menstruate, and patient stated that she never had a well day since. Some time in November, 1903, I examined her and found a cystic ovary the size of a lemon on the right side, and a somewhat enlarged ovary on the left side, uterus in

good position, chest normal, urine negative, right kidney freely movable.

February 23, 1904, I removed the right cystic ovary and tube, and resected the greater portion of the left ovary. Her recovery was uneventful, and she left the hospital three weeks later. The patient continued in perfect health up to the end of September, 1904, when her menses ceased for the first time since date of operation. Examination gave negative results. Four weeks later she was again examined, and a slight fullness was discovered in left tube, not tender to touch, uterus not enlarged, no mammary signs or nausea. November 5th complained of being unable to breathe, lungs and heart normal, patient hysterical, and was relieved by bromides, vaginal examination gave same results as previous one. November 14th patient again had difficulty in breathing, and was markedly cyanosed, and complained of pain in the right lower abdominal quadrant. I suspected an extra-uterine pregnancy, and sent patient to the hospital with the intention of operating. Consultation was requested, and the consultant taking into consideration her highly hysterical state, advised me to wait for more classical symptoms. As the patient was in a very excellent condition, I readily consented. Bromides were again administered with the same good results so far as the dyspnea and cyanosis were concerned, but had no effect on the painful area on right side. Rest in bed, bromides, saline cathartics, and vaginal douches, caused her to feel well enough so that she left the hospital November 25. She at no time had any elevation of temperature, and the pulse was full and strong, varying between 68 and 80. November 27 and 28 patient had a few drops of bloody discharge per vagina. This ceased on the 29th. November 30th patient complained of some pain on right side, abdominal muscles rigid, temperature $99\frac{2}{5}$ per rectum, pulse 90, full and strong; consultant was called, and a few drops of chloroform were administered. A few moments after the examination the pulse began to fail, patient looked very anemic, and rallied very slowly from the anesthetic. There was considerable loss of time before an ambulance could be procured, and the patient expired very soon after arriving at the hospital. I did not dare to ask permission for a post-mortem examination, but decided to make a small opening into the cul-de-sac without consent. As soon as the peritoneal pouch was opened, clots and blood poured out freely. I succeeded in obtaining placental tissue, part of the amniotic sac, and the fetus. Dr. Bacon kindly measured the fetus for me, which was about 4 cm. in length, and stated that it was about a two-months' pregnancy. An interesting feature of the case was that all her pain was referred to the right side, where a complete extirpation of ovary and tube had been performed last February.

My object in reporting this case is two-fold:

First. To impress upon the medical profession that it is a very serious undertaking to administer an anesthetic at the home

of a patient, unless preparations are made to carry out any operative procedure which the exigency of the case may demand; especially is this true in an abdominal lesion, be the same obscure or well defined.

Second. That in examining the abdominal cavity for diagnostic purposes, under anesthesia, we must be extremely careful and gentle, otherwise irreparable harm may result. Pyosalpinx, ovarian abscess, tubal or ovarian pregnancy, appendiceal abscess, hydrops or empyema of the gall-bladder, a distended bladder or cyst of any kind can easily be ruptured. Personally I feel that an exploratory incision is far less dangerous.

DR. J. CLARENCE WEBSTER.—I have had one experience of accidental rupture of extrauterine pregnancy previous to operation. My interne had placed the patient in the lithotomy position and made a bimanual examination while I was preparing my hands. I examined the woman immediately afterwards, and did not find the enlarged tube, though I had felt it the day before. I opened the abdomen at once, and found a ruptured tube, with blood pouring into the belly cavity from the torn veins. I have been careful since that time to supervise all examinations made by inexperienced assistants in cases in which early ectopic pregnancy is suspected, because the untrained fingers, not pressing delicately, may easily bring about such an unfortunate occurrence as that described by me.

DR. J. D. GRAHAM of Springville, Iowa (by invitation).—I will speak of a case quite similar to the one that has been reported to-night, and which I reported before our county medical society last September. The case came under my observation in July. I was called to see a patient, a farmer's wife, some five miles from my office, who was suffering from a severe pain which came on suddenly. She had no premonitory symptoms. She stated the hour when the pain began, and it occurred in the right side, in the lower quadrant. She had intense pain when I saw her, and without examining her I thought she was having a miscarriage. She was American-born, and weighed about 160 pounds. She was accustomed to hard work, and otherwise was in good health, well nourished, and the mother of three healthy children. I thought she was pregnant, and inasmuch as she had not menstruated for three months, it impressed me as being an ordinary case of miscarriage. I waited a short time, then examined her, and found a small uterus for a three months' pregnancy, but considerably larger than the unimpregnated uterus. I found to the left a mass of some sort which I could not very well outline, and examined her again a day or two afterwards under an anesthetic, with care. She was also examined by another physician in company with me. After my examination at the first visit I withheld my diagnosis, and stated that I was uncertain as to what the trouble was. But under anesthesia it appeared plain that the case was one of extrauterine pregnancy, and an operation was advised. Then the question arose as to whether we would move the patient to a hospital or not. It was

twenty miles to the nearest hospital, and she would have to be moved in a wagon or carriage. I made up my mind that the best thing to do was to operate on her where she was. We secured a trained nurse, improvised a hospital, sent the family away, put her under the care of the trained nurse, cleaned up everything, and I operated with the assistance of a physician close at hand, and I found quite a mass of adhesions. The tumor was adherent to everything in the immediate neighborhood, and as I tried to enucleate it, I ruptured the sac and the contents escaped all over the abdomen and floor. But I succeeded in removing the whole thing; made the usual toilet of the peritoneum complete; ligated one or two small vessels; closed the abdominal wound, and the patient made an uninterrupted recovery. In two weeks she was able to sit up, and at the end of three weeks she was able to ride out.

I wish to speak of one point in connection with this case. Dr. Ries, of this city, a man for whom I have a great deal of respect as a physician and surgeon and as a man, believes in getting his patients out of bed as quickly as possible after operations. When I was at the Post-Graduate Medical School, five years ago, I heard him advocate this. I got this woman out of bed as soon as I could, and, as I have said, she is well, and was able this fall to go out and husk her fifty bushels of corn a day. I speak of this case to emphasize the necessity of early operation. I believe in an operation as early as the diagnosis is made unless there be some contraindications, and I think the operation had best be done at the patient's home, unless a well-equipped hospital is close at hand.

DR. E. C. DUDLEY.—I have had no case in which the pregnant tube was ruptured under manipulation; but I have had a case that is interesting from the point of view of this paper.

About three years ago a patient came into my service at St. Luke's Hospital with a diagnosis of tubal pregnancy of about two months' duration, and because of fear that the tube might rupture spontaneously, we decided to operate without delay. The abdomen was opened and the pelvic organs exposed by packing the intestines back with sponges, and up to this time the tube had not been touched. The pregnant tube was exposed to view, and while looking at it we saw it rupture and the blood spurt from it. It was an interesting sight and one seldom seen.

DR. JOSEPH B. DE LEE.—The matter that Dr. Kunz brings up of rupture of extrauterine pregnancy during examination in anesthesia is one that deserves a good deal of attention. Dr. Kelly, in a very recent issue of the *Journal of the American Medical Association*, reports several cases of rupture of abscesses and other tumors in the pelvis during examination. Every one of the examples he brings up I can either parallel in my own experience or in cases which I have seen in consultation, or that I know that have occurred in hospitals where I work.

At Cook County Hospital, when I was an interne there, a woman was brought in with a large tumor in the pelvis resulting from an abortion. She was examined under anesthesia by three of us at

about nine o'clock at night. In the morning at four o'clock she was ill, and died about twelve hours after examination. Autopsy revealed an abscess which took its origin from the tube and had been creeping up the posterior wall of the abdomen, protected by adhesions, and that during the examination the abscess ruptured and the point of rupture was demonstrated post mortem to be between the colon and some of the small intestine into the general uninfected peritoneal cavity.

In Europe, during a touch course which a number of American physicians attended, I saw a case of extrauterine pregnancy which ruptured, and the patient was immediately taken upstairs and laparotomized. In examining a patient once in the dispensary service I discovered a tumor as large as an ordinary drinking-glass which ruptured under my hand, but no evil effects resulted from it. Perhaps it was a parovarian cyst. I do not know.

I was once frightened by an hysterical woman who had an accumulation of gas which formed a phantom tumor, and during the examination the tumor disappeared with a sound as if a cyst or something had burst. We put the patient on a couch, watched her for two hours, decided that nothing had happened, and allowed her to go home.

DR. CHARLES B. REED.—I would like to report a case of

CRIMINAL ABORTION

that occurred in the service of Dr. Wm. E. Schroeder. The patient was admitted to Provident Hospital nine days after the abortion was committed, with symptoms of infection. There was an abscess in the left side of the pelvis, which was drained at the hospital. Several days later there was excruciating pain in the left leg, followed by thrombosis of the popliteal artery, gangrene, amputation, and recovery.

DR. CHARLES S. BACON.—I may add a case of tetanus following abortion. The case was one in which I made a curettement on account of hemorrhage and infection two or three days after an induced abortion, and about three or four days later a well-marked tetanus developed. It was the only case of typical tetanus that I ever saw recover after an attack which lasted for a comparatively long time. At that time I was not quite certain whether the infection had occurred before I saw the woman or had occurred during the operation. This case occurred many years ago. The operation was performed in the house, and I used some of the utensils that were in the house for washing, sponges, etc., and I had some suspicion that I might have possibly infected her myself, but afterward came to the conclusion that the tetanic infection was too soon after the operation for me to have done so. It was only three or four days, and as far as I know, that is rather shorter than the incubation period of tetanus.

DR. WILLIAM H. RUMPF, of Faribault, Minn.—I would like to report one case which happened about two months ago. It is interesting, in that it shows how much women can stand in these

cases of abortion. I was treating the patient for pneumonia, and as she had to remain in bed, she thought it would be a good time to produce an abortion. She did so in a rather interesting way. Her baby had a toy which consisted of a rubber bulb, with a tube attached to it. She pushed the tube up into the uterus and introduced air through the bulb, in this way promptly producing an abortion, as well as a temperature of 105.2° , when I was called to see her. She had consolidation of one lung. The respirations were about 40 per minute. She was practically unconscious. Without giving her an anesthetic, I cleared out the uterus, which contained a mass that was extremely putrid, and in a few hours the temperature came down almost to normal.

As I have said, the case is interesting as showing what some women can do with themselves and still recover. She had used the same method successfully twice before to produce abortions..

DR. D. C. BROCKMAN, of Ottumwa, Iowa (by invitation).—The subject of abortion and the sequelæ is very important and interesting. I recall a case I saw six or seven years ago of a young woman who was sent into the hospital, after having aborted, and she was attended by a professional friend of mine. He cleaned out the uterus. The next day the woman had a chill. He saw her again, and found she had a temperature of 104° . With a piece of gauze on the finger, he wiped out the uterine cavity. I saw her that night, when she had a temperature of 105° . The next day I was called for and was out of town. He saw her again, curetted and irrigated the uterus, and that night she had a chill immediately after the curettement, followed by a temperature of 106° . I arrived home in the night, and told the physician to let the woman alone, but he wanted to curette the uterus again. The next day I was out of town, and the uterus was again irrigated. When I saw the patient her temperature was $107\frac{1}{2}^{\circ}$, as taken by three different thermometers, and I said, We will let the woman absolutely alone; we will not tinker with the uterus any more. The temperature soon went down, and she began to convalesce. She recovered. It was the highest temperature I have known in any puerperal case that recovered. Of course, it was a case of sapremia, due to putrefactive bacteria.

I wish to relate another case as showing the profound and peculiar infection of sapremia. A professional friend of mine from across the river came to see me in regard to a case that he had been treating for some time. He had made some attempt to clean out the uterus, but was unable to do so on account of the low condition of the patient. He said to me: "This morning, when I saw her, she was profoundly comatose. She has a profuse and offensive sweat." I said, Let us get to her and clean out the uterus as soon as we can, or she will die. I went with him, and found the patient's temperature 105° . She had stertorous breathing, was profoundly comatose, so much so that when I put her on the side to introduce a speculum and clean out the uterus, I was able to do so without any anesthetic and without pain. I packed the uterus, after

cleaning it out, with gauze, and in two days she began to convalesce and recovered completely.

Both of these were cases of sapremia, showing the amount of absorption and the serious symptoms that quickly subside after cleaning out the uterus.

DR. CHARLES E. PADDOCK.—There would be less pathologic sequelæ following abortion if the uterus was left alone by the physicians. A great deal of the trouble is due to too much interference and too frequent curettements. When once the fact is established that the uterus is empty, curettement is a dangerous procedure.

DR. CARL WAGNER.—I would like to report briefly two fatal cases of abortion with unusual complications. In both of these cases I was called to see the patient on account of supposed rheumatism. One of the cases concerned a woman about 30 years of age, who had pain in the upper part of her arm and shoulder for eight days. This was thought to be rheumatism. On examination it seemed to me as if there was some fluid in the shoulder-joint. I asked the patient if she had any wounds in her fingers or her hands, which she answered negatively. I further inquired if she had anywhere else any wounds or sores on her body, upon which question a lady friend who was with her said to her, "Why don't you tell the doctor what happened to you?" She then confessed that she had had an abortion about fourteen days ago, and that still something foul-smelling was discharging from her uterus. At the hospital I found fetid-smelling shreds of placenta in the uterus, and a large abscess in the shoulder joint. In spite of repeated extensive drainage, and after lingering for four weeks, she died of septicemia.

The second case refers to one of supposed rheumatism in the back. I saw this case fourteen days after her abortion had taken place. On examination I found a fluctuation over the sacro-iliac joint. Infected remnants of placenta were removed, and a large abscess communicating with the sacro-iliac joint opened at the seat of the supposed rheumatism. This patient, after battling for life for three weeks, died of septicemia.

DR. J. B. DELEE read a paper on "THE THEORIES OF ECLAMPSIA."

(See original article, page 325.)

DR. CHARLES B. REED followed with a paper on "THE OPERATIVE TREATMENT OF ECLAMPSIA." No discussion.

(See original article, page 331.)

TRANSACTIONS OF THE WASHINGTON OBSTETRICAL AND GYNECOLOGICAL SOCIETY.

Meeting of November 4, 1904.

The President, J. WESLEY BOVÉE, M.D., in the Chair.

DR. I. S. STONE read report of case of DECORTICATION OF THE KIDNEY FOR PROLAPSE OF THE ORGAN.

Miss —, nearly 25 years of age, had movable right kidney, for which operation was done a little over a month since. Her condition and the urinary examination preceding the operation presented nothing noteworthy. The patient having had symptoms of appendicitis, we removed a very long and adherent appendix before the loin incision was made. The kidney was brought out of the wound in the usual manner and the capsule divided along its convexity and turned back over half, or perhaps two-thirds of the surface. The capsule was firm, rather thicker than usual, and the kidney rather larger than the average. As her urine showed nothing very important, and the kidney itself was not apparently diseased, we had no reason to suspect the least difficulty in the recovery of the patient. The upper free portion of the capsule was sutured above the last rib and the kidney thus held up as far as possible. We did not expose the ureter, nor did we strip the capsule far enough towards the hilum to cause injury or leakage of urine as a result. The operation was concluded by infolding the fatty capsule upon itself and returning it into the wound and then packing a large quantity of plain sterile gauze in such a way as to secure the kidney in position. On the fifth day the patient felt the catgut suspension suture give way just as she was indulging in a long yawn. We now began to remove the gauze gradually from the wound, which required three days. No force was used in its withdrawal, but with it came a small amount of urine, and this quantity increased for a few days until the dressings had to be changed four times during the 24 hours, being thoroughly saturated each time. This amount soon diminished, and by a week after the removal of the gauze the escape of urine had nearly ceased. The wound was completely closed in the usual time, and the patient was sitting up in three weeks and has made as perfect recovery as any other patient might in the same time. I had previously seen two cases where urine escaped from the kidney after operation. One was in the days when we used silk for suspensory sutures; the leakage being due to injury of the kidney by the suture and the urine promptly ceased its flow when the offending suture was removed. The second case was after an operation similar to the one I have just reported.

although the quantity was so small that we should not have suspected the character of the discharge but for its odor. The patient had no trouble whatever in her recovery. In the present case the fistula was probably due to stripping the capsule to the pelvis of the kidney in removing the gauze packing. Urinary examination showed numerous casts and heavy trace of albumin during the time the patient remained in the hospital, but this had cleared up before she left the city.

DR. STONE also showed a specimen of TORSION OF OVARIAN PEDICLE WHICH SIMULATED APPENDICITIS.

Miss L. entered Georgetown University Hospital, with a history of at least two attacks of appendicitis, the last of which was ten days previously. As the patient was a young woman no examination of her pelvis was made, but an ovarian complication was suspected, because she had pain and slight tenderness in that region. No distinct mass could be found where the appendix is usually located. On opening the abdomen a small ovarian cyst with a twisted pedicle was seen, which had produced symptoms closely resembling those of appendicitis. Strangely enough, the appendix had become attached to the distended cyst and was drawn downwards far below its normal position. At the time of this "twisting" a considerable amount of blood had escaped into the substance of the ovary and had caused marked distention and a low grade of inflammation which in turn caused the usual peritoneal adhesions between ovary and tube on one side, and the appendix and omentum on the other. The appendix had some slight evidence of former attacks of infection, but it is quite clear that the last attack of illness was almost entirely due to the "torsion" symptoms. The pedicle was much longer than usual and the ovary had turned over upon its pedicle a number of times. The specimen shown was unique. It was interesting to note the small size of the tumor which gave rise to the symptoms. Its weight would not exceed one ounce.

DR. MORAN read the paper of the evening on INDICATIONS FOR CESAREAN SECTION: REPORT OF TWO CASES, RECOVERY OF MOTHERS AND INFANTS.*

DR. FRY several years ago reported some fifteen cases of placenta previa delivered by the natural passages and had since added five, all of which were delivered satisfactorily. At the time he did not favor Cesarean section for placenta previa, but careful study of the cases reported convinced him that there was a field for the operation, and last year he read a paper advocating it in primipara, with small vagina, rigid os and central implantation of placenta. Shortly after reading the paper a patient fulfilling these indications was seen in consultation, and section was done. Patient was about six months pregnant and gave a history of frequent bleeding. She did not know she had been delivered until the time of removal of the stitches from the abdomen, and made an excellent recovery. He did not favor the operation for eclampsia

*See original article, page 107.

per se. He performed one Cesarean section on an eclamptic woman, but she had also a contracted pelvis. Manual dilatation in multipara and vaginal Cesarean section are preferable. With a true conjugate not less than $3\frac{1}{4}$ inches he thought a patient might be delivered by forceps, version or symphyseotomy; a greater contraction would be sufficient to justify Cesarean section. The main thing to bear in mind was the size of the child's head. The treatment of contraction of the pelvis by induction of labor had been neglected. He would depend upon the adaptation of the head to the pelvis and use pelvimetry only for routine work. He had recently had a case with conjugata vera 16 cm., and head engaged in the pelvic brim. Second examination per vaginam found the head down in the pelvis and the patient had since had an easy labor. He would advise careful examination in the latter months of pregnancy in order to come to some conclusion as to relative disproportion between head and pelvis and to outline treatment. With a true conjugate of $3\frac{1}{4}$ inches forceps might be used tentatively or a version be done if possible, preparing at the same time for Cesarean section. He believed there was yet a good field for symphyseotomy.

DR. SOTHORON wished to know why, if the patient was in labor 24 hours, was frequently examined and forceps were used, symphyseotomy was not done instead of Cesarean section.

DR. J. TABOR JOHNSON believed that it would be necessary to place a patient for Cesarean section in proper environments as for hysterectomy, and that the time should be set and arrangements made that would conduce to its successful termination. Frequent examinations, bad surroundings and possible infection made unfavorable cases.

DR. ANDERSON said that the only criticism he had to make was that the essayist gave too much attention to the unknown quantity, the child.

DR. STONE was quite ready to indorse the views of the essayist, but hesitated to advise their application in private practice. With all of the many conveniences of hospital practice, including assistants, skilled obstetricians might obtain better results by the method proposed than by turning or other rapid delivery. But he now had in mind the serious nature of the operation and how often it might be called for when circumstances prevented its prompt and speedy execution, as in private practice. It would appear, then, to be necessary to expect the few indications for Cesarean section to be limited in application, yet it had a definite place in obstetrics whereby it might be possible to at least diminish the fetal mortality which usually attended placenta previa.

DR. MORAN, replying to Dr. Sothoron, said that he elected to do Cesarean section instead of symphyseotomy in face of the generally accepted unfavorable indications, frequent examinations, early rupture of the bag of water and forceps application, because he knew that the attending physician had used every precaution against infection. However, in future, under similar conditions he would perform symphyseotomy.

Meeting of November 18, 1904.

The President, J. WESLEY BOVÉE, M.D., in the chair.

DR. STONE presented a specimen of ECTOPIC GESTATION. Mrs. W., age 31, married eleven years, had been previously healthy except one miscarriage during the first year after marriage. She had no history of hemorrhage or irregular menstruation until August of the present year. She had her usual period early in August, and two weeks afterward had a free flow of rather different character from that of the usual periods, and felt several attacks of pain in the left side of the pelvis, which necessitated the use of anodynes. Her condition seemed to be that of a semi-invalid. She was not obliged to remain in bed, and came to Dr. Stone's office on November 12th for examination. Her uterus was found to be of normal size, but turned far over in the right iliac fossa. A large mass occupied its position and appeared to be a tense sac or cyst. No indications of former pelvic peritonitis were discovered, and a diagnosis of tubal gestation was made. The patient came into the hospital, where the specimen was removed on November 14th. The specimen when seen was rather dark in color and was adherent at its base where the ovary was completely encapsulated by peritoneal coating of sigmoid and broad ligament. By dividing the ovarian ligament and liberating the tube at the cornu the specimen was removed without rupture. When opened, the fetus and membrane were easily seen.

DR. PRENTISS presented an embryo at the second week of gestation.

DR. J. T. JOHNSON said that cases of tubal pregnancy should be treated by prompt operation just as a malignant new growth which might end a woman's life at any time.

DR. MILLER spoke of the liability to mistake these cases for abortion. Recently he had been called to see a woman who had been curetted after passing lumps of tissue with hemorrhage. The physician, a very competent and careful man, had curetted the woman, thinking she had had an abortion. One week after her discharge from the hospital she had begun to bleed, and had severe pelvic pain in the left side. Two hours before she was seen she had felt something "break" inside the abdomen, and when seen she presented the appearance of beginning acute peritonitis. She was suffering severe general abdominal pain, had a rigid abdominal wall, was vomiting, pulse 130-140, temperature 103.5° F., leucocyte count 16,000. A ruptured tubal pregnancy was found at operation.

DR. SOTHORON read the essay of the evening, THE APPLICATION OF FORCEPS IN CONTRACTED Pelves.*

DR. J. T. JOHNSON said that a contracted pelvis is usually considered a contraindication to the use of the forceps. The essayist had asserted that when the pelvis measures less than 3¼ inches it requires an expert to deliver the woman safely, and it was as

*See original article, page 236.

true as that it takes an expert to do a Cesarean section safely in similar cases. The mortality of Cesarean section was lower for both mother and child than difficult forceps applications. If it required so expert a man to use the forceps safely in such cases, it would be no harder to find one who could do the Cesarean section with a lower mortality. He deprecated the brutal efforts which were, at times, used in forceps delivery. Cesarean section was the better operation except in very slight contracted pelvises. The great difficulty in determining the size of the child rendered forceps operations doubtful even in slightly contracted pelvises, taking it for granted, which he did not believe, that one could measure accurately slight differences in pelvic measurements.

DR. MORAN thought that the management of labor in cases of contracted pelvis was one of the most difficult questions in obstetrics. He would say that where only relative indications were present the tentative use of the forceps was proper. The absolute indications has been raised to $3\frac{1}{4}$ inches. With a diameter of less than 7 cm. the delivery of the child was impossible. Three inches for flat pelvises and $3\frac{1}{4}$ inches for generally contracted pelvises. In contracted pelvises most children were delivered spontaneously. In all cases where the relative indications were present one should use the forceps tentatively except where there was a bony obstruction with a floating head after several hours of pains. Sufficient time should be allowed for moulding and engagement of the head at the brim of the pelvis, and where these had occurred time should be given to see if delivery would not take place. Pelvimetry showed the character of the pelvis and not its capacity. After unsuccessful application of the forceps Cesarean section was generally preferable to other operations. If, however, the case had been in labor several hours, with a possibility of infection, he would elect to do a symphyseotomy.

DR. ABBÉ said that the induction of premature labor always seemed to him the most rational procedure in these cases. The difficult point was to determine the exact time when it should be done. It gave a comparatively high mortality for the children.

DR. SPRIGG said that Williams' investigation with regard to the induction of premature labor showed that most of the children were lost. It seemed to him (Dr. Sprigg) a rational procedure. The relative sizes of the head and pelvis was the important part in determining the steps necessary to take in delivering a woman. The cases of symphyseotomy which he had observed all had some difficulty in walking afterwards. In using forceps the possibility of Cesarean section should always be borne in mind and one should not delay the operation too long. No woman should be allowed to go into labor without having pelvic measurements made.

DR. MORSE said that many cases were of necessity and not of selection. There was frequently no opportunity to measure the pelvis beforehand or to induce premature labor. It was then necessary to take into consideration all the circumstances and make the most

of conditions. Williams' statistics as quoted by Dr. Sprigg were not borne out. This was shown especially in France where this procedure is quite frequently resorted to. He was opposed to high forceps operations through small pelvics and preferred version. Jewett and Hirst both avoided laying down rules and believed that each case should be considered on its own merit.

DR. SOTHORON.—Seventy-two per cent. of the Johns Hopkins Hospital cases were delivered spontaneously. With the head engaged in the brim, there was a better chance of delivering a live child. Each case should be considered separately.

Meeting of December 2, 1904.

The President, J. WESLEY BOVÉE, M. D., in the Chair.

DR. STONE presented an enlarged and greatly

THICKENED URETER,

which he had removed from a patient upon whom he had previously done a nephrectomy. The patient was sixty years of age, and had good health until she developed a hydronephrosis, which came to operation in April, 1904. At this time the patient's condition prevented him from completing the removal or examination of the ureter. The wound closed completely, but later signs of suppuration appeared and continued. The last operation was for the purpose of obtaining a radical cure. There was occlusion of the ureter at the vesical end. No tubercle bacilli were found at any time.

DR. FRY presented a

DISEASED APPENDIX

removed at a laparotomy for other pelvic trouble, and sloughing fibromyoma. This specimen is presented in order to emphasize the importance of examining the appendix in all cases when the abdomen is opened for any purpose.

This appendix was bound down by adhesions at its base and constricted. The remainder of its canal was distended by a dark, bloody fluid. The mucous membrane was congested, thickened and softened.

DR. FRY also presented the post-mortem specimen of a sloughing fibroid of the uterus after childbirth.

Mrs. B——, aged 36 years, became pregnant in January, 1904. She had been in charge of a surgeon in New York before pregnancy, who had advised hysterectomy, but she removed to Washington soon afterwards. I saw her when five months pregnant. The uterus extended up to the umbilicus, several fibroids projected from the surface, and one large tumor occupied the left cornual surface.

· Patient was kept under observation. It had been decided to

operate when near full term, delivering the child by Cesarean sections and removing the uterus.

Labor set in prematurely September 15, and child was born in six hours. There was severe post partum hemorrhage, requiring hot intrauterine douche and gauze tamponnade. Sepsis began a day or two after labor and continued to the day of her death, October 25. Temporary improvement followed the expulsion of a slough of the gangrenous tumor on October 9.

October 15 phlebitis developed in left side.

Owing to the loss of blood at childbirth and the sepsis afterwards, it was not possible to operate with any hope of success. The day before death there was severe abdominal pain and collapse.

The autopsy revealed a sloughing fibroid in the left cornual region, which broke through the peritoneal investment of the uterus. Fringe-like masses projected into the peritoneal cavity. There were dense adhesions. The cavity of the uterus was gangrenous.

DR. LEWIS said his case was that of a woman who had lived many years with a large tumor. She had been helpless and bed-ridden in consequence of a broken hip. There were many adhesions of intestines, etc., to the tumor, which had been removed at autopsy.

DR. BOWEN.—Dr. Fry had a case in a woman of 65 years, who was suffering from hemorrhage. It was interesting to note that the hemorrhage began after the menopause.

DR. BOVÉE asked if fibroids were ever known to develop in the uterus of a woman who had passed through an artificial menopause.

DR. J. T. JOHNSON said that he had done salpingo-oophorectomy many times for hemorrhage with fibroid tumors. Sometimes the tumor was not larger than a cocoanut in cases that he had operated upon. Hysterectomy for the same condition is so successful that he has given up the former operation. He has been compelled to operate to remove the uterus where he had previously removed the ovaries. In his opinion the percentage of cures after the artificial menopause is about the same as after the natural menopause.

DR. BOWEN cited a case which he had operated upon a few years ago for dense pelvic adhesions. No fibroid tumor at the time of this operation. Now there is a large tumor which he believes is fibroid. She has had no menstruation or other hemorrhage since the first operation.

DR. STONE said Dr. Fry's second specimen was full of interest to him. He had seen the case with Dr. Fry when the woman was suffering with phlebitis. The infection occurred at labor. The question was how did it occur?

DR. MILLER.—The work of Menge and Krönig several years ago went conclusively to show that the normal vagina in pregnant women is free from pathological bacteria. These when introduced

generally quickly die. Under certain conditions where the vagina, cervical canal, and uterine cavity contain stagnating blood and where the cervical canal is patulous, pathogenic bacteria can gain entrance into the vagina and live there, and where there is an abrasion of the uterine mucosa they, at times, enter the uterine wall. With fibromyomatous puerperal uteri the favorable conditions are present, i.e. blood in the vagina, a patulous cervix, an abrasion of the uterine mucosa with perhaps a poorly nourished or necrotic tumor.

DR. FRY said that sepsis was one of the dangers which accompany the delivery of women with these tumors. He had intended to do a Cesarean section, but the premature and rapid labor prevented this. He has had five cases of labor complicated by fibroid tumors. All of the children were lost.

DR. BOVÉE asked if these dangers were not an indication for early operation in cases of fibromyomata.

DR. STONE once did a myomectomy on a pregnant woman. She died of ileus.

DR. BOWEN said that it is not always possible to wait until the fetus is viable in pregnancy complicated with fibromyomata. Pain may be so great that operation becomes necessary to relieve this. He had in one case done a myomectomy at the third month and the woman went to term.

DR. J. T. JOHNSON asked in reference to Dr. Stone's case if it would not have been better to have removed the ureter at the time of the first operation.

DR. STONE said the question had been asked him why the ureter had not been catheterized. The patient was not in a condition to stand it, and, besides, it had been entirely unnecessary.

DR. LEWIS read the paper of the evening, "FIBROID TUMORS." (See original article, p. —.)

DR. J. T. JOHNSON, in opening the discussion, said Dr. Lewis had a remarkable record of 100 per cent. of cures. Operations for such tumors show a very small mortality now, but he remembers when it was 80 per cent. to 95 per cent. He congratulates the essayist upon his courage in advising operation early. If more men would advise early operation there would be fewer complications when operation was done.

DR. BALLOCH asked the best manner of attacking these tumors when situated in the broad ligament.

DR. MILLER said, at times, the method advocated by Dr. Kelly of Baltimore was very effectual, i.e., splitting down the tumor through the middle and approaching the uterine arteries from the central plane.

TRANSACTIONS OF THE OBSTETRICAL SOCIETY OF LONDON.

The President, EDWARD MALINS, M.D., F.R.C.P., in the chair.

Meeting of January 4, 1905.

A paper was read by Mr. A. C. R. Foulerton and Dr. Victor Bonney on

AN INVESTIGATION INTO THE CAUSATION OF PUERPERAL INFECTIONS.

The writers have examined the contents of the uterus—

1. In twelve cases in which the puerperium was normal— examination being made from the third to the tenth day after normal labor, and
2. In fifty-four cases of either miscarriage or labor at full term in which fever occurred.

The writers have also made a bacteriological examination of the cervical secretion in thirty non-pregnant women who were suffering from vaginal discharge.

A large glass tube, of the shape and dimensions of an intra-uterine douche tube, served as a sheath for a wire with a plug of sterilized cotton wool at its extremity. The upper end of the glass tube was covered with a cap of cotton wool. After sterilization of the apparatus, the cap of cotton wool was dipped in a mixture of melted paraffin and thymol. After the glass tube had been introduced into the lower part of the uterus the cotton wool cap was withdrawn by means of a piece of string, the wire carrying the sterilized plug of cotton wool was then pushed up to the fundus, and a sample of the contents of the uterus thus obtained.

1. *Contents of the Uterus in the Normal Puerperium.*—In all twelve cases examined the contents of the uterus proved sterile of bacteria.

Others have obtained similar results; but others, again, have found certain bacteria in the uterus in the course of normal puerperia.

Vogel believes that towards the end of the puerperium certain bacteria may invade the uterus without producing any symptoms.

The matter cannot be regarded as determined one way or another. The series of cases examined by the writers is too limited to be taken as a proof of the sterility of the uterus in the normal puerperium, but they consider that the weight of previously published evidence is in favor of sterility.

2. *Contents of the Uterus in cases of Puerperal Fever, and in Fever after Miscarriage.*—Fifty-four cases in all were examined, six of miscarriage and forty-eight of labor at full term.

Clinically the cases could be separated into three groups—

A. Cases with severe symptoms, terminating in death.

B. Cases with severe symptoms, recovery.

C. Slight fever cases (temperature not exceeding 102° F.).

Out of these fifty-four cases the uterus was apparently sterile of bacteria in fifteen; bacteria of one kind or another were found in the remaining thirty-nine.

	Sterile.	Bacteria found.	Total
Group A.—Miscarriage	—	2	
Labor at full term.....	—	12	14
Group B.—Miscarriage	—	4	
Labor at full term.....	5	17	26
Group C.	10	4	14
			54

The bacteria found were:—

	Cases.	Total.
Streptococci, in pure culture.....	10	
" with other bacteria.....	15	25
<i>Micrococcus pneumoniae</i> , in pure culture.....	1	
" " with other bacteria.....	3	
? " " (not fully identified).....	2	6
<i>Staphylococcus pyogenes aureus</i>	—	1
<i>albus</i>	—	3
<i>A. diplococcus</i> (— Gram.), not the gonococcus.....	—	2
<i>A. diphtheroid bacillus</i>	—	2
		39

Examination of the cervical secretion in non-pregnant women with vaginal discharge was made in thirty cases.

Cultures of various bacteria were obtained in.....	16
Bacteria were demonstrated by microscopic examination but attempts at culture failed in.....	3
Attempts at culture failed and no bacteria were seen on microscopic examination in.....	9
Attempts at culture failed and no microscopic examination was made in	2
	30

Amongst the bacteria found in sixteen cases were *Staphylococcus pyogenes aureus*, *S. p. albus*, *Micrococcus gonorrhæe* *Bacillus coli communis*, a "diphtheroid" bacillus, a diplococcus (— Gram, but not *M. gonorrhæe*), and an encapsulated diplococcus (+ Gram? *Micrococcus pneumoniae*).

GENERAL RESULTS OF BACTERIOLOGICAL EXAMINATION.

The general results of the bacteriological examination which have been made are—

(1) Streptococci were present in the uterus in twenty-five out of thirty-nine cases in which cultures from the contents of the uterus were obtained.

(2) Streptococci were present in the vagina in two cases out of seventeen in which the contents of the uterus were apparently sterile of bacteria.

(3) Streptococci were present in the uterus in twenty-five out of forty cases of severe fever, and in the vaginal secretion in two out of five similar cases in which the contents of the uterus were sterile of bacteria.

(4) Out of fourteen cases of "slight" fever the contents of the uterus were sterile of bacteria in ten, and in four cultures of bacteria were obtained, but not a streptococcus.

(5) Of the fifteen cases in which the contents of the uterus were sterile of bacteria, a marked proportion were primiparæ presenting considerable lacerations of the the cervix or perineum.

(6) The presence of *Micrococcus pneumonia* was proved in four of the cases, and in two others it was probably present.

(7) In the present series the absence of *M. gonorrhææ* and anerobic organisms was noticeable.

(8) In the series of cases in which the cervical secretion was examined proof was obtained of the presence in the cervical canal of non-pregnant women of bacteria, which had also been found in puerperal infections of the uterus; but in no case were streptococci found.

The Pathology of Puerperal Infections.

I. Puerperal fevers may be caused by—

(a) Primary infection of lacerations of the vaginal walls or perineal tissues (with secondary infection of the uterus sometimes).

(b) Primary infection of the contents of the uterus or of the placental site.

II. The processes concerned in the production of puerperal fevers may be classified as—

(a) Primary, vaginal, or perineal infection. { Local infection + toxemia;
Local infection + toxemia,
+ General infection.

(b) Primary infection of uterus. { Local infection + toxemia;
Local infection + toxemia,
+ General infection.

Conclusions.

(1) Puerperal fever when bacteriological proof of the nature of the infection is wanting should be treated as being due to streptococcic infection.

(2) Active curetting of the uterus in puerperal infections is not to be advised.

(3) The most satisfactory treatment for streptococcic infections of the uterus is comprised in the administration of an appropriate antistreptococcic serum, and digital exploration and clearing out of the contents of the uterus, followed by intrauterine douches.

(4) The fever following a streptococcic infection of the uterus may be transient, and subside within forty-eight hours without any

special treatment—a fact to be remembered when dealing with the conveyance of infection.

(5) Autogenetic infection is probably sometimes a cause of puerperal fevers, but the use of vaginal douching before labor with the view of obtaining asepsis is not advisable.

(6) In this series of cases bacterial invasion of the uterus has always been marked by severe symptoms with abrupt rise of temperature to 102° F., or higher.

(7) In the majority of the cases in which the contents of the uterus were sterile, and there were severe lacerations of the cervix or perineum, the symptoms were very much less severe, and the temperature did not rise to above 102° F.

DR. PETER HORROCKS said that he regarded the pathological fact that the contents of the uterus were found sterile in every instance where the puerperium was normal as another nail in the coffin of interference in labor, such as routine syringing, vaginal or uterine.

He remarked on the absence of any distinction between septicemia and sapremia in the classification adopted by the authors of the paper who had taken the account of fever as the sole guide to the severity of the illness. The presence or absence of an offensive discharge was of the greatest moment. In the grave form of puerperal septicemia, proper, the lochia were not offensive but were scanty or suppressed and sweet. Whereas in sapremia the lochia were not scanty but were offensive and when the offending products were cleared out of the uterus the temperature as a rule rapidly fell to normal and the patient recovered. Doubtless, in some cases, the patient suffered from a mixed sepsis, and then the clearing out process was not followed by the improvement usually expected. In the severe non-offensive fatal cases it had been his experience that there was always more or less peritonitis, generally suppurative. It was generally accepted that the microbe in these cases was the streptococcus. He should like to know whether it could be detected by examination of the blood.

In his experience, the results obtained by the use of antistreptococcic serum were sometimes excellent and sometimes nil. And so far as he knew, it was impossible to say beforehand whether the serum would do good or not. Hence it was his practice to administer the serum in 10 c.c. or 20 c.c. doses subcutaneously two or three times in 24 hours.

DR. AMAND ROUTH agreed that streptococci were the most frequent cause of the severer forms of puerperal fever; he had also found many cases of fever where the contents of the uterus were proved to be sterile. Was it possible that some of these cases were infected by moulds, yeasts or streptothrices, all of which may cause diseases in women? He had very little faith in antistreptococcic serum, having seen only one case recover by its use, and had much more reliance on Tr. Ferri Perchloridi in 20 or 30 drop doses every two or three hours. He considered that this drug ought to be given as a routine treatment. In all cases also the uterine cavity

should be emptied and strong iodine solution applied all over the endometrium as soon as infection is suspected.

DR. SIKES said that he had examined about 20 cases which were all of a mild type. He agreed with the authors of the paper that in such cases one got a negative result, and also that the most frequent association of bacteria was the *B. coli communis*, with *staphylococcus pyogenes*. With regard to the finding of streptococcus so frequently he was much surprised, as from not a single one of his cases had he cultivated the organism from the interior of the uterus. He had been much impressed with the good results obtained by early digital exploration followed by intrauterine douching, but he considered that the results from antistreptococcic serum were often unsatisfactory.

DR. BOXALL agreed with the conclusion that, as a rule, active curetting of the uterus is not to be recommended. As regards the use of antistreptococcic serum he still preserved an open mind. There were many disadvantages in its use, and he had seen considerable danger follow, but never appreciable improvement. Inasmuch as it has been proved that at the time of labor the vagina may contain pathogenic organisms, the presence of which is often unsuspected and difficult to detect, he adheres to the practice of douching the vagina early in the course of labor, with a view to preventing the possibility of autogenetic infection, on the same principle that he takes measures to disinfect and render sterile the skin of the abdomen before performing laparotomy. Severe cases of septic infection have been often attributed to gonorrheal infection and to exposure of the patient to insanitary surroundings before labor sets in; but his experience was that, provided antiseptic precautions were efficiently carried out and asepsis maintained during labor and afterwards, both gonorrheal infection and the previous insanitary conditions were rendered inoperative and never led to severe septic infection. In his opinion, the possibility of autogenetic infection need have no terrors for the obstetrician when antiseptics are efficiently employed.

DR. ARNOLD LEA has carried out a similar investigation in 18 consecutive cases of severe puerperal infection, and with much the same result as the authors of the paper. He had also examined the blood in 14 of these cases. In 2 cases only were streptococci discovered, and both ended fatally. He believed that in many cases of fatal infection, the blood remained free from streptococci. In these cases the infection was mainly lymphatic and the blood remained sterile. This was especially frequent in the acute and rapidly fatal types, and might account for the frequent failure of the serum treatment: the streptococci developed in the lymphatic vessels and tissues of the pelvis, producing toxemia, but the serum is powerless to act directly upon them as it can only be injected into the blood stream. He did not consider that the use of the curette was contraindicated in puerperal infection. It was a much more efficient method of cleansing the uterine cavity than the finger. But it should be done early and thoroughly.

MR. FOULERTON, in reply, explained that most of the cases which were clinically included under the term "sapremia" fell into the pathological category of local infection plus toxemia, occasionally with general infection superadded. He thought it unlikely that either *M. gonorrhoeae*, yeast parasites or *streptotrichae* had been overlooked in any of his cases. Too much importance had he felt sure been attributed to *M. gonorrhoeae* as a cause of puerperal infection. Both he and Dr. Bonney held very strongly that an immense proportion of the cases of streptococcic puerperal fever were avoidable, and the more nearly the conditions of general obstetrical practice approximated to those of a properly conducted lying-in hospital the less frequent would streptococcic infection be, and the lower the mortality from puerperal fever. Active curetting of the uterus in puerperal infections could not be justified, for if limited to the surface the operation would facilitate in every possible way deeper infection of the wall of the uterus and increase the mischief; and if the wall were already deeply involved, no operative interference short of hysterectomy could remove the cause of infection. While recognizing the difficulties associated with serum treatment, there could not be any doubt in his mind but that an antistreptococcic serum did act as a specific cure in some cases of puerperal fever.

VAGINAL HYSTERECTOMY IN THE PUERPERIUM FOR SEPSIS, DUE TO SUPPURATION OF MYOMA.

DR. ARNOLD LEA read this paper.

Curetting was performed without beneficial result. Pyrexia continued with occasional rigors. There was no peritonitis. The uterus was removed by means of ligatures per vaginam 7 weeks after delivery. Both uterine appendages and a portion of omentum, all of which were implicated, were removed at the same time. A glass vagina drainage tube was used. The temperature fell to normal within a week; complete recovery followed. Pus from the tumor showed streptococci and *B. coli communis*.

DR. RUSSELL ANDREWS mentioned a case in which he performed abdominal hysterectomy 3 days after delivery on account of pyrexia and pain due to a fibroid as large as an adult head, which was undergoing central necrosis. The patient made a good recovery. He agreed that the vaginal route was to be preferred in such cases if the fibroid was not too large.

DR. BOXALL said that even the removal of an infected uterus sometimes failed to cut short the sepsis and to cure the patient. Post-mortems made on patients who have succumbed to puerperal sepsis showed why in many cases this result was to be expected. For in many cases implication of the venous and lymphatic plexuses and other foci of infection formed beyond the uterus, which rendered it impossible to completely get rid of the whole source of the trouble even by opening the abdomen and removing the uterus. As a result septic infection often continued to spread and a fatal result often followed.

Meeting of February 1, 1905.

The President, EDWARD MALINS, M.D., F.R.C.P., in the Chair.

DR. HEY GROVES read a paper on a new

OPERATION FOR THE CURE OF VAGINAL CYSTOCELE.

After pointing out that the condition was one of hernia of the bladder through the interval between the levatores ani, he proceeded to describe the anatomy of these muscles, and to show how they formed the floor of the pelvis through the median gap in which the urethra and vagina passed. Cystocele was accompanied by a divarication of the adjacent edges of the levatores ani. The unsatisfactory results of all operations hitherto performed, for this condition depended on the fact that they relied solely on the removal of vaginal wall. He proposed therefore the following operation. A transverse incision through the vaginal wall 3 cm. behind the urethral orifice. The vagina is separated from the urethra and bladder, and the inner edges of the levatores ani defined in each angle of the wound. The muscles were drawn together and stitched by two rows of suture. The vagina was united in the line of the original incision. He stated that the first case in which he had performed the operation was two years ago, and that the patient had since borne a full-term child, and that the cystocele showed no signs of recurrence.

DR. CULLINGWORTH expressed the opinion that the profession would welcome any suggestion towards a more radical and scientific treatment than that hitherto adopted. The principles upon which the operation described were based appeared to be sound. But he wished to know whether separation of the vaginal wall from the urethra and the lower part of the bladder was usually as easy as had been described in the paper. And also he was inclined to think that, in the class of patients suffering from cystocele, and at the age when relief was usually sought, it would not be very easy to find the separated borders of the levatores ani. He hoped that in order to judge of the value of the operation described, an account of the case would be given as to the then condition of the patient some few years hence.

In reply DR. HEY GROVES stated that the patient's age was 35, but that he anticipated that the operation would be even more serviceable in old women, because in them the levatores ani could be stitched together for a greater extent regardless of encroachment on the vaginal outlet. He had not found any difficulty in separating the anterior vaginal wall from the urethra and bladder.

DR. FRANK E. TAYLOR showed a

WANDERING SPLEEN SIMULATING AN OVARIAN TUMOR

which had caused retroversion of the uterus. It was completely contained within the pelvis, and so had not given rise to any abdominal enlargement or tumor. It was removed by operation

from a married nullipara, aged 29, who had complained of pain in the left side, back, and legs.

The PRESIDENT said that the difficulty in making an accurate diagnosis between an enlarged spleen and ovarian tumor was sometimes greater than would appear. He called to mind a patient he had seen some years ago with Sir Spencer Wells. A diagnosis of ovarian cystic tumor was made, but on operation it turned out to be a much enlarged spleen. He remembered a similar case of a spleen mistaken for ovarian tumor, where the spleen was much displaced and the pedicle axially rotated. He removed it with complete success.

DR. HEYWOOD SMITH said that a similar case was sent up to him from the country as an ovarian tumor. He made out that the tumor was a spleen displaced. Mr. Bland-Sutton removed it at his request. The patient recovered and remained well.

TUBERCULOUS DISEASE OF THE BODY OF THE UTERUS.

MR. J. BLAND-SUTTON showed this specimen removed by operation from a spinster, aged 46. She had suffered from menorrhagia for two years. A rounded body inseparable from the uterus could be felt in the hypogastrium. Owing to increasing hemorrhage and febrile symptoms, degeneration of a fibroid was diagnosed. Abdominal hysterectomy was decided on. The ovaries and tubes were left, but, with the exception of a small portion of the cervix, the uterus was removed. On opening the uterus a rounded sessile non-encapsuled tumor was found growing from the endometrium of the anterior wall. On section the tumor showed patches of caseation, and on microscopic examination tubercle bacilli were seen. The most important clinical feature of the case was its similarity to a degenerating submucous fibroid.

DR. PETER HORROCKS said that he had seen several cases of tubercle of the lining membrane of the uterus, but in all the cases the endometrium of the cervical canal and of the corporeal portion was affected. The clinical features more resembled cancer than fibroid.

The President (Dr. Malins) then delivered the Annual Address.

The following list of Officers and Council for 1905 was read:

President, W. R. Dakin, M.D. *Vice-Presidents*: A. H. Free-land Barbour, M.D. (Edinburgh); Amand Routh, M.D., B.S.; William Japp Sinclair, Knt., M.D. (Manchester); Albert C. Butler-Smythe. *Treasurer*: George Ernest Herman, M.D. *Chairman of the Board for the Examination of Midwives*: John Phillips, M.D. *Editor of 'Transactions'*: Herbert R. Spencer, M.D. *Honorary Secretaries*: Montagu Handfield-Jones, M.D.; Robert Boxall, M.D. *Honorary Librarian*: Arthur H. N. Lewers, M.D. *Other Members of Council*: Henry Russell Andrews, M.D.; Murdoch Cameron, M.D. (Glasgow); Charles James Cullingworth, M.D.; Ernest Rumley Dawson; Thomas W. Eden, M.D.; John Henry Ewart (Eastbourne); John Shields Fairbairn, M.D., B.Ch.; Charles Arthur Goulet; William Sampson Handley, M.S.,

F.R.C.S.; David Berry Hart, M.D. (Edinburgh); Arnold W. W. Lea, M.D. (Manchester); Cuthbert Lockyer, M.D., B.S.; Charles Hubert Roberts, M.D.; David W. Roberts, M.D.; Frank Rushworth, M.D.; Mary Ann Dacomb Scharlieb, M.D.; Walter C. Swayne, M.D. (Bristol); Charles J. Wright (Leeds).

REVIEWS.

A TREATISE ON OBSTETRICS, FOR STUDENTS AND PRACTITIONERS.
By EDWARD P. DAVIS, A.M., M.D., Professor of Obstetrics in the Jefferson Medical College, Professor of Obstetrics in the Philadelphia Polyclinic, Medical Director of the Jefferson Maternity, Visiting Obstetrician to the Jefferson, Philadelphia and Polyclinic Hospitals, Member of the American Gynecological Society, College of Physicians of Philadelphia, Philadelphia Obstetrical Society, Member (Founder) of the International Congress of Obstetrics and Gynecology, Honorary Member of the State Medical Society of Virginia, Honorary Member of the Surgical Society of Bucharest, Consultant to the Preston Retreat, etc. Second Edition. Illustrated, with 274 Engravings and 39 Plates in Colors and Monochrome. Lea Brothers & Company, Philadelphia and New York, 1904.

In reviewing the work of such an eminent authority as Dr. Davis we notice with regret a number of typographical errors, which detract to some extent from the great value of the book. For example, on page 51, the author states that the distance between the anterior superior spines of the ilia is found to be, in the average pelvis, $26\frac{1}{2}$ cms. or 10 inches; 25 cm. or 10 inches would be correct. On page 52, the incorrect abbreviation of cms. is given a number of times, while on page 53 the correct abbreviation is given. Cesarean Section is spelled in a number of instances "Cesarian," and, while both forms of spelling are correct, uniformity could have been easily obtained. The name of the French obstetrician, de Ribes, is frequently spelled de Ribe's. The "Tucker McLean forceps" (page 253) should read Tucker McLane, and, so far as we have been able to ascertain, the handles of the forceps have never been made with the knob on the lower end, as shown in the photograph. On page 53 the author gives the average measurement for the diagonal conjugate as 13 to $13\frac{1}{2}$ cm., and the usual measurement of the internal conjugate as $11\frac{1}{2}$ cm. Are not these figures too high? Is not the internal conjugate usually between 10 and 11 cm.? On page 546, in speaking of the use of forceps in cases of defective rotation of the occiput, the author states that the use of the forceps in cases "in which the cervix tends to rotate posteriorly" is usually conducted, etc. The word occiput should replace "cervix."

The chapter on hydramnios, with the report of a most interesting case, is good. Fœtal circulation and the development of the genitals are described, we think, in too brief a manner, and

a diagram of the circulation would aid the student greatly. The treatment for cases in which foetal death has taken place is not considered. The chapters on the hygiene of pregnancy, the diseases of the heart complicating pregnancy with their treatment, and the toxemia of pregnancy are well given. The chapter on eclampsia, in the light of recent investigation, is disappointing. The chapter on spontaneous labor and its management is, in the main, good, but here there are a number of details which are missing, although very important. The use of gloves is not referred to in any way, nor is the use of a sterile, or, at least, clean gown for the accoucheur advised. No mention is made of the importance of making out the presentation and position by external examination, and in the treatment of the first and second stages of labor no reference whatever is made to the auscultation of the fetal heart. The mechanism of the birth of the shoulders is incomplete, and, while the author states that if the cord is about the neck, it should be slipped over the body, no treatment is given for cases in which the cord must be clamped or tied and cut.

In the third stage of labor, the author says that "observation shows that the placenta is delivered, not by contractions of the uterus, but by the abdominal muscles." It is the general impression that good contraction of the uterus must be secured before the placenta can come away, either by voluntary effort or the use of the Credé method. In speaking of expression of the placenta, under the treatment of third stage of labor, the name of Credé is not given, although his method is described. The importance of inspecting the placenta and membranes after their expulsion is not referred to. In speaking of the management of face presentations, the writer states that "rupture of the perineum will often occur and should be anticipated by episiotomy." In this opinion, where laceration seems inevitable, many will certainly concur, believing with the author that episiotomy, properly timed and executed, will frequently save the patient from extensive perineal laceration. In the extraction of the after coming head, the Smellie Veit method is not mentioned as such. The chapters on post-partum hemorrhage and puerperal sepsis are good, and there are many excellent and exceedingly instructive plates in the latter chapter. The chapter on the pathology of the puerperal state is well written and there are many good points in the text. In the treatment of subinvolution, the use of tampons might have been described, as a valuable means of assisting involution. On page 522, the author states that the Vorhees bag is "made of the best quality of rubber" and he gives the impression that the bag is elastic, and not strong. As a matter of fact, the bag is made of canvas, and covered with rubber. It is inelastic and strong traction can be made upon it, without fear of rupture. In the chapter on forceps, the author mentions the Farnier and Simpson forceps, but surely the Elliott instrument is so widely used as to be entitled to mention. Fig. 183, showing the introduction of the right blade, is far from good. Fig. 184, showing

the locking of the forceps, represents the lock as being in the vagina. Another and longer instrument would be better in a case where the head is so high up. Fig. 185, showing the same portion of the technique, is so indistinct as to be of little value. In Fig. 187, the photograph has been taken at a most inopportune time, for little can be seen except blood pouring from the vagina. The chapter on version is excellent, as are also the chapters on the physiology, pathology, and diseases of infancy. The chapter on jurisprudence is a valuable addition to the book. It is to be regretted that, in the bibliography of the subject of obstetrics, the author refers to the work of but twenty-five Americans, other than himself, from a total of 256 references. There are many excellent features of the work, and the author is to be complimented upon much that is exceedingly interesting and instructive.

MANUAL OF OPERATIVE SURGERY. By JOHN FAIRBAIRN BINNIE, A.M., C.M. (Aberdeen), Professor of Surgery Kansas City Medical College, Kansas City, Mo., Fellow of the American Surgical Association, Member de la Société Internationale de Chirurgie, pp. 644, 8vo; 559 illustrations, some in colors. Philadelphia, P. Blakiston's Son & Co., 1905.

This is a small but valuable work on operative surgery, which is remarkable in that it omits all description of procedures ordinarily sufficiently described in the usual textbooks on general surgery, and includes much that is ordinarily omitted.

It is divided into seven parts. Part I describes the special surgery of the head and neck, making prominent subjects like cerebral tumors, mastoid, tic douloureux, hare lip, cleft palate, sympathectomy, and so on; Part II includes the breast, pleura and chest wall, lungs, pericardium and heart, and posterior mediastinum; Part III, the abdomen, with recent interesting and valuable advances in its surgery; Part IV, the genitourinary system; Part V, the extremities; Part VI, the spine; and Part VII, certain unclassified topics.

The text is clear; full in detail, yet concise; practical and very satisfactory. The book is beautifully printed on fine, thin paper, is well illustrated, and bound in flexible covers.

APPENDICITIS AND OTHER DISEASES ABOUT THE APPENDIX. By BAYARD HOLMES, B.S., M.D., Professor of Surgery in the University of Illinois, etc. 8vo. pp. 350. New York: D. Appleton & Co., 1904.

Written clearly, concisely, and with a graphic freshness of style, this work is wholly admirable. It gives the sum of the author's experience as corrected by the experience of other operators in the surgery of "the most mournfully interesting structure in the body." The teaching is radical. To Dr. Holmes "the treatment of appendicitis is appendicectomy." "Every therapeutic measure other than appendicectomy which has been proposed or practiced has added to the confusion of the literature and the disaster of the patient."

THE SURGERY OF THE DISEASES OF THE APPENDIX VERMIFORMIS AND THEIR COMPLICATIONS. By W. H. BATTLE, F.R.C.S., Surgeon to St. Thomas Hospital, formerly Surgeon to the Royal Free Hospital, Hunterian Professor of Surgery at the Royal College of Surgeons of England, and E. M. CORNER, M.B., B.C., F.R.C.S., Surgeon in Charge of Out Patients St. Thomas Hospital, Lecturer at the Royal College of Surgeons. 8vo. pp. 206. Chicago: W. T. Keener & Co., 1905.

This is a work somewhat similar in scope to that of Dr. Holmes, noted above, and contains very good chapters on the differential diagnosis and treatment of various conditions that may simulate appendicitis. Though its teaching is distinctly surgical, it is not so emphatic in its advocacy of very early operation as is Dr. Holmes' book.

THE SURGICAL TREATMENT OF BRIGHT'S DISEASE. By GEORGE M. EDEBOHLS, A.M., M.D., LL.D., Professor of the Diseases of Women at the New York Postgraduate Medical School and Hospital, etc. pp. 330. New York: Frank F. Lisecki, 1904.

The first half of this volume is made up of reprints of the various papers on this subject that have been written by the author. The second half includes the detailed histories of seventy-two patients operated upon by the author for chronic Bright's disease. In sixty-eight cases both kidneys were submitted to operation. Chronic nephritis affecting one kidney only was noted in eleven instances, the author holding that the affection is unilateral in a heretofore unsuspected fairly large proportion of cases. All but five wounds healed by primary union. Of the seventy-two patients, seven died within two weeks of the operation, twenty-two died later, three disappeared from further observation, and forty are known to be living. Of the forty, three are unimproved, twenty improved, and seventeen cured. The least time that has elapsed since operation in any of the forty cases is seven months, the longest eleven and a half years. The evidence submitted, in the author's opinion, not alone justifies the surgical treatment of chronic Bright's disease, but establishes surgery as at present the main, if not the only, hope of sufferers from a hitherto incurable malady.

TRANSACTIONS OF THE AMERICAN GYNECOLOGICAL SOCIETY. Vol. xxix. pp. 494. Wm. J. Dornan, Printer, Philadelphia, 1904.

This volume contains a large number of valuable papers and discussions presented at the twenty-ninth annual meeting of the Society, held in Boston in May of 1904. Many of these papers and the discussions in abstract have appeared in this journal.

TRANSACTIONS OF THE EDINBURGH OBSTETRICAL SOCIETY. Vol. xxix. Session of 1903-1904. pp. 242. Edinburgh: Oliver & Boyd, 1904.

Among the more important papers in this volume are a number on relations of the thyroid and its secretions to eclampsia; on malignant uterine complications; on fibromata of the uterus; on

leucocytosis in pelvic disease in the female; on obstructed labor; on lateral section of the pubes; and on the obstetric satchel.

BEAUTY THROUGH HYGIENE. By EMMA E. WALKER, M.D., Member of the New York Academy of Medicine. 12 vo. pp. 306. Illustrated. New York: A. S. Barnes & Co., 1904.

This is one of the few books of its kind that the physician can safely and with benefit recommend to all young women. It is written in simple, straightforward style, is at once popular and scientific, clear, womanly and delicate. Its author advocates the building of tissues, the control of nerves, and the symmetrical development of the body through the agency of intelligent hygiene. Sleep, bathing, diet, exercise, the conservation of force, the prevention of waste, the restraint of hysterical emotion and the cultivation of cheerfulness are among the subjects most ably treated.

A DICTIONARY OF NEW MEDICAL TERMS. Including upwards of 38,000 Words and Many Useful Tables, Being a Supplement to "An Illustrated Dictionary of Medicine, Biology, and Allied Sciences." By GEORGE M. GOULD, A.M., M.D., Author of "The Student's Medical Dictionary," "30,000 Medical Words Pronounced and Defined," "The Meaning and the Method of Life," "Borderland Studies;" Editor of "American Medicine," etc. Based Upon Recent Scientific Literature. pp. 571. Philadelphia: P. Blakiston's Son & Co., 1905.

This work is a supplement to the first edition of the Illustrated Dictionary published about ten years ago. During this time there have been devised, according to the author, over 30,000 new terms. Many of these have, of course, been incorporated in subsequent editions of the Illustrated Dictionary, and many of these, with the later terms, have been included in this supplement. Wherever it is possible reference has been made to that volume and the definition has been omitted. This, of course, limits its usefulness largely to those possessing the original work. That it is possible to discover, even in so recent a volume, the omission of new medical words, shows the necessity of its possession to those who do own the earlier dictionary, and illustrates the rapidity of growth of the scientific vocabulary. The definitions possess the merit of brevity. The tables of classified abbreviations, and those of classified facts in the body of the work are of value.

BRIEF OF CURRENT LITERATURE.

OBSTETRICS.

Extrauterine Pregnancy.—A critical report of 233 cases of extrauterine pregnancy from the records of the Kgl. Charité and Kgl. Univ.-Frauen-Poliklinik from 1894 to 1903, is given by Ernst Runge (*Arch. f. Gyn.*, Bd. 70, H. 3). His study tends to show that abnormalities in the puerperium and chronic gonorrhea are the chief etiological factors of ectopic pregnancy, and that nulliparæ are in no wise exempt. A longer or shorter period of sterility usually precedes tubal pregnancy. Tubal abortion or rupture occurs most frequently in the first to the third months of gestation. Operative treatment of abortion or rupture is indicated only when life appears to be threatened, or obvious increase in size of the tumor occurs, or when the general condition remains poor, or the tumor does not begin to become absorbed, or with protracted fever. Laparotomy is the best procedure. Drainage of the abdominal cavity should be avoided when possible. The placenta and fetal sac should be completely removed if feasible. Blood clots in the abdominal cavity should be cleared out only when easily accessible, excepting, of course, when they show supuration or breaking down. If the child is viable operation should not be deferred until term. Hematocèles should be treated conservatively if possible, and if operative measures are demanded they should usually be confined to posterior vaginal section. Laparotomy is advisable only when the tumor is very large or accessible with difficulty from the vagina.

Adam Czyzewicz, Jr. (*Zeit. f. Gyn.*, No. 4, 1904), records a case of ectopic gestation seen at the eighth month. Operation was postponed until term, when a living child was delivered by laparotomy. The placenta became partially detached, so it was necessary to remove it entirely, and the persistent bleeding from its points of attachment required ligation of the broad ligament. The mother died of peritonitis four days later.

Experimental Production of Hydramnios.—A series of experiments has been carried out upon rabbits by Bruno Wolff (*Arch. f. Gyn.*, Bd. 71, H. 1), with a view to determining the cause of hydramnios. The quantity of liquor amnii was determined in twenty-three normal pregnancies and in fifteen rabbits whose kidneys had been removed. This operation had no marked influence upon the quantity of liquor amnii when performed early in pregnancy; but when done in the latter part of the gestation period the amniotic fluid was increased over twenty fold and constituted an actual hydramnios. The writer believes that especially when there is accumulation of excrementitious substances in the maternal blood and in marked circulatory disturbances, these substances

are carried to the fetus and exert an influence upon its secretory function. Many cases of hydramnion may arise in this way, though there may be many other causes which lead to the condition.

Experiments Concerning the Causes of Onset of Labor.—The experiments of Ludwig Blumreich (*Arch. f. Gyn.*, Bd. 71, H. 1) upon rabbits seem to show that excess of carbonic acid and insufficiency of oxygen in the blood do not initiate labor pains, while mechanical irritation has a marked influence in bringing on labor.

Induction of Premature Labor for Contracted Pelvis.—Carl Hahl (*Arch. f. Gyn.*, Bd. 70, H. 3) presents a clinical study of eighty-four cases of induction of premature labor for contracted pelvis. In brief, the results obtained were: Maternal mortality, 2.38 per cent.; maternal mortality due obviously to infection, 1.19 per cent.; morbidity, 7.23 per cent. Of eighty-four children, sixty-three (75 per cent.) were born alive; twenty-one (25 per cent.) were stillborn. Of these, fifty (59.52 per cent.) were discharged alive, and forty-eight of them were followed for one year. At the end of that period forty-two (50 per cent. of the entire number born) had survived. C. A. Lorey (*Arch. f. Gyn.*, Bd. 71, H. 1) bases a similar paper upon 137 cases from the Kgl. Universitäts-Frauenklinik at Halle. In 100 of these the indication for induction of labor was contracted pelvis. Seventy-four (74 per cent.) of the children were born alive, and fourteen of these died in the first ten days; 60 per cent. discharged living. Of 56 of these, 40 (71.5 per cent.) were living at the end of the first year. Of the 51 legitimate children among these, 40 (78.5 per cent.) were then alive. Of 83 women, 73 (88 per cent.) had afebrile puerperia; one died from sepsis. Maternal mortality, 1.2 per cent. The writer considers induction of premature labor as indicated when the true conjugate is from 8 to 10 cm. if a history of disproportion between head and pelvis in previous labors is obtainable. The operation should not be performed before the 36th week. If the true conjugate is below 7 cm. it is absolutely contra-indicated.

Morbidity in the Puerperium After Birth of Macerated Feti.—The 70 cases studied by Carl Kothén (*Arch. f. Gyn.*, Bd. 70, H. 3) were comprised in the records of the Universitäts-Frauenklinik, at Giessen. They showed that maceration of the fetus does not exert a marked influence upon the puerperium. The morbidity in such cases was only from 10.8 to 11 per cent. higher than the general puerperal morbidity during the same period. Fetid lochia in the puerperium is a much more common occurrence than in ordinary cases.

Accidental Hemorrhage.—Arthur Vernon Macan (*Br. Med. Jour.*, Oct. 22), finds that in the absence of disease all accidental hemorrhage has a natural tendency to stop. That all accidental hemorrhage commence as internal hemorrhage, and that many cases of internal hemorrhage cease spontaneously, and are not

diagnosed at all or only by finding old clots on the surface of the placenta postpartum. A large proportion of cases of so-called accidental hemorrhage is due to low insertion of the placenta. The hemorrhage from low insertion of the placenta is not likely to cause either internal or combined hemorrhage. Rupture of the circular sinus of the placenta gives symptoms that are very similar to those of internal or combined hemorrhage. There are other factors beside want of tone in the uterine wall, that tend to cause the hemorrhage to remain internal, for example, lessening of the vis a tergo, the position of the first hemorrhage, its amount, and the firmness of adhesions around it. In the worst cases, where the cervix is long and the os rigid, it is necessary to deliver the woman at once. That the Cesarean section, either vaginal or abdominal, is a better way of doing this than the accouchement forcé. The less severe cases, when the cervix is long and os rigid, should be treated by a properly applied vaginal plug. Uterine contractions may cause the hemorrhage to cease during the contraction, but not during the intervals, except indirectly, as favoring thrombosis. If uterine contractions stopped hemorrhage, accidental hemorrhage during labor would not occur. Accidental hemorrhage is often due to uterine contractions—for example, after the sudden escape of excessive liquor amnii and after the birth of the first of twins. When the hemorrhage escapes from under the placenta the tendency to further separation of the placenta is lessened, because the membranes are easier separated than the placenta. This is even more the case when the hemorrhage becomes external. Rupture of the membranes always causes diminution in the intrauterine tension. Rupture of the membranes makes it more necessary to increase the intrauterine tension by plugging the vagina; it is not good treatment in ordinary cases, but is efficacious when the hemorrhage is caused by the persistence of bag of waters far into the second stage. For a similar reason, rupture of the membranes is most efficient in stopping hemorrhage from low insertions of the placenta. The great danger in effecting delivery of the child per vias naturalis when the cervix is only partially dilated is due to the great difficulty there is in judging how much time is at our disposal. In plugging the vagina and the application of a tight binder and a firm perineal bandage we have a most efficient method of treating all but the worst cases of accidental hemorrhage, perhaps even these. If the hemorrhage has been recurrent, the same symptoms are more urgent than where the hemorrhage appears for the first time. Adhesions may stop hemorrhage, but we cannot diagnose their presence. If the original seat of the hemorrhage is at the very centre of the placenta, the whole of the placenta will become detached, and if the placenta is situated exactly at the fundus, the membranes also will become separated before the hemorrhage becomes external. All cases of accidental hemorrhage should be reported, and not the severe cases only, and the position of the rupture in the membranes carefully noted.

Treatment of Streptococcic Puerperal Fever by Antitoxic Serum.—Alexander G. R. Faulerton (*Lancet*, Dec. 31) has found streptococci of one sort or another in the uterus in 46.3 per cent. of a series of 54 cases. In these cases the organisms have been found under conditions which indicated that they were the primary cause of the fever. From 25 strains of streptococci isolated from the same number of cases of puerperal fever he is satisfied that there were more than one distinct species. He has used a serum obtained from a horse immunized against a variety of the strains, which were isolated in the above 25 cases, with good results in two extremely severe forms of streptococcic infection. With any of the antistreptococcic serums at present in use it is advisable to commence treatment with an injection of at least 20 cubic centimeters, and one must be prepared to repeat this dose, if necessary, at least every 24 hours. If no improvement follows two such doses another brand of serum should at once be tried. It appears that an antitoxic serum to be of most value should be prepared from a series of strains of streptococci.

Thomas Rose (*Lancet*, Dec. 31) reports a case of puerperal infection successfully treated by antistreptococcic serum. The case was one of pure streptococcus infection. Several injections were given, the largest 20 c.c., with marked and prompt improvement.

J. W. Thomson Walker (*Lancet*, Dec. 31) gives the following conclusions upon the use of antistreptococcic serum:

1. That injection of antistreptococcic serum in cases of pure streptococcal infection has been followed by strikingly beneficial results.

2. That variability in the results of the serum in proved streptococcal infection has been due to the selective activity displayed by the antitoxin of each variety of streptococcus or to the serum being used too late in the case or having lost its activity from staleness.

3. That more uniform results are likely to be obtained from the present "compound" antistreptococcic serum than from the earlier forms, from the prompt injection of serum at the commencement instead of near the close of a severe infection, and from the use only of serum which has been recently prepared.

4. That the initial dose may with benefit be increased and that a large quantity spread over several days causes no ill-effect.

5. That the administration of the serum should be continued for some days after the general symptoms have disappeared and a recrudescence thus avoided.

GYNECOLOGY AND ABDOMINAL SURGERY.

Cancer of the Uterus.—As justifying the vaginal operation of total hysterectomy for cancer of the uterus, F. Schauta (*Monatschr. f. Geb. u. Gyn.*, Bd. XIX., H. 4) submits the results of a careful study by F. Hitschmann of serial sections of 1,182 lymph nodes situated between the diaphragm and the pelvis in 60 cases

of women dying after operation for cancer of the uterus, from recurrence or intercurrent disease, or having cancer at the time of death. These showed secondary growths in some cases in very small lymph nodes, while large, hard, infiltrated nodes were often free. Cancer cells were found also in the connective tissue and in lymph spaces or veins in a few instances. These facts show that a complete radical removal of carcinoma of the uterus, with all carcinomatous nodes, is rarely possible, if the nodes are already involved.

Disinfection of the Hands.—R. Schaeffer's (*Monatsschr. f. Geb. u. Gyn.*, Bd. XIX., H. 3 and 5) experiments with various methods lead him to the belief that the subject has been considered too much from the antiseptic standpoint, whereas it should be regarded chiefly as mechanical. He prefers the hot-water and alcohol method to all others, as he finds its antiseptic action equal to that of other chemical disinfectants, especially for moist objects and vegetating forms of bacteria. Its disability to kill spores in the short time of application is shared by other antiseptics. It surpasses all others, except tincture of soap, in its power to loosen fat and epithelium, and with these the easily removable bacteria. By shrinking and hardening the skin and so decreasing the liability of any remaining bacteria to become detached, it reduces this danger to a minimum, and in this rôle is unequalled.

Typhoidal Infection of Ovarian Cyst.—P. W. Zantschenko (*Monatsschr. f. Geb. u. Gyn.*, Bd. XIX., H. 1) records a case of suppurating ovarian cyst, which yielded a pure culture of typhoid bacilli. The patient had had typhoid fever eight months before.

New Method of Suspension of the Uterus by the Round Ligaments.—The method of treatment of retrodeviation of the uterus suggested by Nikolaus Bardesen (*Zent. f. Gyn.*, No. 3, 1904) consists in suspension of the uterus from the abdominal wall by the round ligaments. Through a suprapubic incision in the median line, extending upward to within 10 or 12 centimeters of the umbilicus, the uterus is freed if necessary. A vertical button-hole opening is made through the muscular aponeurotic and peritoneal structures of the abdominal wall at each side of about the middle of the laparotomy incision, and 2 to 3 centimeters from it. Through each of these openings a loop of the corresponding round ligament is drawn, and the peritoneum and musculo-aponeurotic structures of the laparotomy wound are closed in tiers by continuous sutures. The loops of round ligaments are then sewed together over this line of union by three catgut sutures and the skin of the abdominal incision is closed. The posterior fornix is packed lightly and the patient is kept on the back for 10 to 12 days, the vaginal tampon being changed every three days.

Membranous Endometritis.—From a series of cases F. F. Lawrence (*Jour. A. M. A.*, Dec. 10) draws the following deductions: Membranous endometritis is probably a condition due to trophic changes in the endometrium secondary to some intrapelvic dis-

ease. The intrapelvic disease often is unilateral. It is probably always unilateral in the beginning, although this remains to be proved. The fact that all local methods of treatment of the uterus have failed to relieve the condition, together with the foregoing facts, would seem to warrant removal of the tubes and ovaries on one or both sides, when shreds and casts are a part of painful menstruation. The fact that nearly half of these cases were unilateral, although all of them had suffered for years, would warrant the hope of saving the possibility of maternity in all cases given early operation.

Many, if not all, the cases of membranous endometritis are due to ovarian and tubal disease developing as a complication or sequela to the exanthemata. This being true, the strictest attention should be given those structures during the exanthemata, and the slightest indication of trouble should be promptly dealt with. Early attention may often save one tube and ovary, where neglect will sacrifice both. In all cases, no matter what age, in which membrane is cast off during menstruation, a thorough pelvic examination should be made. The importance of a thorough case history in all cases of menstrual pain should be emphasized. Conditions of tubes and ovaries not inflammatory and not due to any form of infection may possibly cause this symptom.

Amenorrhea.—S. L. Cragie Mondy (*Br. Gyn. Jour.*, Nov.) reports a case of amenorrhea of four years' standing successfully treated by fuchsine given in a pill three times a day. She took these for one week, when she was suddenly seized with fainting and giddiness, which lasted an hour, accompanied by vomiting and pains in the stomach and a menstrual discharge lasting one day. The treatment was continued in smaller doses, until the periods became normal.

Treatment of Cancer.—A. W. Mayo Robson (*Br. Med. Jour.*, Dec. 3) is of the opinion that, while cancer is not infectious in the ordinary sense of the term, it is locally infectious and capable of distribution by contact and inoculation; it is also autoinfective. If possible cancerous tumors should be removed without preliminary incision, leaving a wide area of healthy tissue around the growth, and wherever practicable the nearest lymphatic glands, and the vessels going to them, should be removed, whether enlarged or not. If the tumor has been incised for diagnostic purposes, the incision should be closed, the instruments and hand of the operator sterilized, and the operative field purified before proceeding with the operation.

Cancer appears to be both contagious and inoculable among human beings, therefore, it would seem most desirable that all dressings taken from cancer patients should be destroyed, that contact with cancerous ulcers should be avoided, and that the common use of beds and utensils with cancerous patients should not occur.

A general acceptance of the view that cancer has usually a pre-cancerous stage, and that this stage is one in which operation

ought to be performed, would be the means of saving many useful lives, for it would lead to the removal of all suspicious epithelial conditions before the onset of cancer. Robson holds that the arrest or removal of known causes as well as the abolition of discoverable pre-cancerous conditions, whenever or however occurring, constitute true preventive treatment.

Menorrhagia.—A. F. Tredgold (*Br. Gyn. Jour.*, Nov.) cites a case of violent menorrhagia successfully treated with suprarenal extract. He prescribed 15 minims of Parke Davis' solution of adrenalin chloride with 10 minims of tincture of cannabis indica to be given every two hours. At the end of twenty-four hours hemorrhage had completely ceased, and the medicine was diminished to one-half the dose, but within a few hours hemorrhage came on again, and the patient was put back on the original prescription for another forty-eight hours, when treatment was discontinued, there being no further hemorrhage.

Use of the Stem Pessary.—J. H. Carstens (*Jour. A. M. A.*, Dec. 10), concludes that dysmenorrhea in young girls is often produced by infantile uteri, when it occurs after thirty in virgins by premature atrophy of the uterus. The uterus can only be developed by exercise, and this can be accomplished by the stem pessary, as the uterus contracts and tries to expel it. Recurring stenosis or flexions are often cured by the stem pessary if kept in for six months or a year. Scanty menstruation in fleshy women, and amenorrhea and sterility from any of the above causes can be greatly relieved by the hard rubber stem pessary.

Radical Operation for Intractable Prolapse.—Christopher Martin (*Br. Gyn. Jour.*, Nov.), advises extirpation of the uterus and vagina in those cases of prolapse in which all other methods have failed. This is a serious operation, accompanied by considerable hemorrhage and danger of infection, and should be kept in reserve as a last resort. The main aim of this operation is, after removal of the uterus and vagina, to bring together the fascia of the pelvis in such a way as to make a firm fibrous diaphragm extending from one side of the pelvis to the other, and having adherent to it the bladder in front and rectum behind. This forms a new pelvic floor similar to that in the male. The author reports four cases successfully operated upon. All the cases were accompanied by considerable hemorrhage and became infected, but the ultimate results were good.

Chorio-Epithelioma.—In an article on this subject, Cuthbert Lockyer (*Prac.*, Dec.) discusses this growth with special reference to its association with lutein-cysts and excessive lutein-reaction. In four cases examined by the author he found an excess of lutein-tissue, and in three others, although the ovaries were regarded as normal, lutein-cysts being absent, the solid ovarian stroma was strewn with lutein-cells, so that it seems clear that in estimating the amount of lutein-tissue present no help is to be gotten from observations by the naked eye. These cases

were cited in favor of the theory of Pick, which is, that where lutein-cells are in excess their internal secretion produces a reaction upon the developing ovum, converting it into a mole. This theory still needs proof, which can only be obtained by the careful cooperation of the physician and the pathologist.

Post-Operative Vomiting.—Richard F. Chase (*Am. Gyn. and Ped.*, Dec.) advises, in severe cases of persistent post-operative vomiting, the washing out of the stomach with salt solution until the fluid comes away clear, then eight to twelve ounces of salt solution may be left in the stomach. The treatment should be repeated at the first signs of nausea or vomiting occurring one hour after the first treatment, and probably it is best to repeat once in from four to six hours under any condition. Often high enemata and inflation of the colon will be indicated also.

Conservative Operations on the Ovaries.—James W. Cokenower (*Jour. A. M. A.*, Dec. 17) believes that operations on the ovaries that preserve the menstrual and reproductive functions should be employed, when possible, in lieu of complete extirpation. Healthy displaced ovaries may be anchored to posterior surface of the broad ligament or by shortening the infundibulo-pelvic ligament. Sterile women and married women who are using means to avoid pregnancy are unfavorable subjects on which to do conservative work on the ovaries. Conservative operations should be avoided on all pus cases, as a general rule.

DISEASES OF CHILDREN.

Digestive Disturbances from Use of Too High Fat Percentages.—L. Emmett Holt (*Arch. of Ped.*, Jan.) considers that disturbances of digestion resulting from an excess of fat, are quite as serious as those following the use of too high proteids in modified milk. The ability to digest fat varies in health and disease, and errors may also be committed in using, instead of an ordinary milk with 4 per cent. fat, a rich Jersey milk containing 5 to 7 per cent. Fat is sometimes intentionally increased excessively for the purpose of overcoming chronic constipation. When large percentages of fat are employed, very rapid and unusual gain in weight often goes on steadily until an acute upset occurs. In other cases the results are gradual, and often marked loss of appetite, cessation of gain of weight or even a loss, apparently a self-regulation by the child of overfeeding. The use of high fat may cause not only habitual vomiting or regurgitation, continued fermentation, and finally gastritis, but also intestinal disturbances and even aggravation of chronic constipation. Hard, dry, gray stools then passed consist almost entirely of undigested fat. Usually the errors have resulted from fondness for rich Jersey milk and cream. If the modification is done at home the physician should order from a milk laboratory a cream or milk of definite fat percentage, or the milk should be habitually obtained from the same dairy, whose percentage he can consider fairly constant, or it should be tested

by him or at a laboratory with the Babcock tester. As to how much fat may be wisely given to healthy infants opinions differ. Children vary in their capacity to digest fats as well as proteids, but each has a limit beyond which it is unwise to go. The writer has never seen any advantage, but often much harm, from raising the fat above 4 per cent. When there are marked symptoms of gastric or intestinal indigestion it should be reduced below 3 or 4 per cent. Simply raising the fat seldom relieves chronic constipation.

Influence of Laboratory Feeding in Gastroenteric Disease.—Maynard Ladd (*Arch. of Pediatrics*, Oct., 1904) has studied the influence of laboratory feeding on 216 infants with diseases of the gastroenteric tract, the majority of which were cases of fermental diarrhea and ileocolitis. The acute cases were ill on the average seventeen days, and the chronic 3.2 months, before treatment, and the latter lasted from one to thirty-one weeks. In comparing the influence of feeding upon infants of different ages and stages of development, the nutrition of each at the beginning and end of treatment was judged by the estimation of its weight development. This was calculated from the weight index, which is the ratio of weight of a given infant to that of the average normal infant of the same age. Judged by this standard, over 50 per cent. of the cases had a weight development of only 40 to 70 per cent. when first seen. Group I.—Cases which maintained or increased their weight index while on laboratory milk, and entirely recovered from acute gastric and intestinal symptoms. These included 109 cases, or 50.4 per cent. The group gained 8 per cent. in weight index, a maximum average gain per week of 156 grams from the lowest weight during treatment. Group II.—Showed loss in weight indices, yet recovered from acute gastrointestinal symptoms and showed material gains in weight. This includes 58 cases, or 26.8 per cent. Average duration of treatment 5.9 weeks. Maximum average gain per week from lowest weight, 94 grams. Group III.—Mostly recovered from gastrointestinal symptoms but weight not materially increased. Includes thirty-seven cases, or 17.2 per cent. Average length of treatment, 3.7 weeks. Average loss in weight from lowest point reached, 6.5 grams per week. Eleven of this group not improved, eight not traced. Group IV.—Fatal cases, twelve, a mortality of 5.6 per cent.

Influence of Sugar on Fermentation in Milk and Milk Curds.—The most common fermentative change in milk, says H. L. Russell (*Arch. of Pediatrics*, Oct., 1904), is souring, a conversion of milk sugar into lactic acid. Not infrequently this fermentation is supplanted by abnormal changes, in which gas is produced and the curd develops a more or less marked taint, certain specific fermentative bacteria gaining the ascendancy over the normal lactic acid-producing organisms. Usually cultures of freshly drawn milk contains few lactic acid forms, but as the milk becomes older they thrive more luxuriantly than any others. To

solve the question why this lactic acid group is able to control the field the writer conducted a number of experiments, assuming as a working hypothesis that the enormous multiplication of lactic forms and the simultaneous disappearance of practically all other species must be due to the influence of some food element or waste product upon the species in question. He dialyzed milk and thus removed milk sugar and other soluble constituents, and incubated the product as well as other portions of the same to which sugars (glucose and saccharose) had been added. The former invariably putrefied; the latter series soured with no disagreeable odor. Curds from which cheddar cheese is made were washed in water before ripening, and other portions were similarly treated, but with the addition of saccharose or lactose. The second series developed the normal cheddar flavor, while the former acquired a flavor which was increasingly unpleasant according to the age and to the thoroughness of washing. Both milk and curd are rich in nitrogen and would naturally undergo putrefactive changes, but milk sugar evidently prevents putrefactive organisms from reaching their maximum development on account of the acid formed by the lactic acid bacteria. When milk sugar is removed the lactic acid bacteria develop, but produce little or no acid. These studies have an important bearing on infant feeding. If conditions arise whereby the lactic bacteria are not able to develop, if they are overpowered by the growth of other species, the character of the fermentations produced are materially different. The most important condition that determines the probable type of development is, it seems, the presence of the sugar. It is quite possible that this factor may enter into the distinction between cow's milk and mother's milk. The first is higher in nitrogen and lower in sugar, hence may not be so suitable for growth of lactic species. The beneficial use of foods consisting largely of carbohydrates, in the treatment of infantile disorders such as summer diarrheas may be an application of this principle that the sugar exerts a protective effect on the character of the fermentations produced.

Strangulated Hernia in Infants.—Leonard A. Bidwell (*Brit. Jour. of Children's Diseases*, Jan.) reports successful operations for strangulated hernia in children nineteen and twenty-two days of age. He emphasizes the point that a bad prognosis should not be given in such cases, and that consequently time should not be wasted before operating in trying to reduce the bowel by taxis or other methods. By applying a very small dressing and fixing it on with collodion infection by urine is avoided.

Decapsulation of the Kidney for Chronic Nephritis.—Augustus Caillé (*Arch. of Pediatrics*, Oct., 1904) reports as a cure a case of chronic nephritis operated upon by decapsulation at the age of four and a half years. The first symptoms developed at two years of age after measles and severe burns. Urine at seven years normal, general condition good. At the time of operation the urine and the gross appearance of the kidneys were indicative of chronic

parenchymatous nephritis. The writer believes that some of the virtues of decapsulation are due to massage incident to handling the kidney. He would advise inspection of the kidneys through lumbar incisions in cases in which acute nephritis not secondary to heart lesions does not clear up in six to eight months, and splitting of the capsule or decapsulation of one or both kidneys if they appear swollen or enlarged.

Hodgkin's Disease.—The variety of names, Hodgkin's disease, pseudoleukemia, anemia lymphatica, adénie, malignant lymphoma, lymphadenoma, lymphosarcoma, etc., by which this affection is known shows the difficulty of finding a satisfactory causal factor. Though the common opinion is that it is an infection of unknown origin, certain writers have held that it is dependent upon the tubercle bacillus. Thus Sternberg makes the statement, unsupported by inoculation experiments or cultures, that fifteen cases resembling pseudoleukemia were all tuberculous. Sailer believes that the majority of cases of pseudoleukemia, if not all, will ultimately be recognized as tuberculous in nature. This deduction he draws from a study of four cases of enlarged lymph nodes in which he demonstrated tuberculosis at autopsy. He considers that there are three forms of disease of the lymph nodes that may give rise to the syndrome characteristic of pseudoleukemia: lymphosarcomatosis, tuberculosis, and a peculiar infectious process whose cause has not yet been discovered. In support of the view that Hodgkin's disease is an entity, DeWitt H. Sherman and Harvey R. Gaylord (*Arch. of Ped.*, Jan.) present the history of a girl under observation for four years before her death at twelve years of age from Hodgkin's disease, complicated at the end by tuberculous bronchopneumonia. The cervical lymph nodes began to enlarge at seven years; at eight, several were removed which had shown no tendency to break down. A few months later other nodes grew rapidly. Under arsenic temporary reduction occurred, followed by renewed enlargement. These cervical nodes were removed and showed to consist of spindle connective tissue cells with a few lymphocytes and a number of giant cells. Sections stained for tubercle bacilli failed to show them, as did the organs of a guinea pig into whose ear vein and abdominal cavity macerated portions of the nodes were injected. About a year later the patient was again admitted to a hospital with similar enlargement of nodes of the other side of the neck and in the groins, and with signs of consolidation in the left lung. Tubercle bacilli were not found in the sputum until three months later. Autopsy six months after admission showed great enlargement of thoracic and abdominal, as well as of the superficial, lymph nodes, and tuberculous bronchopneumonia in left lung. Fragments of retroperitoneal lymph nodes were implanted in the abdominal cavity of a guinea pig, which died in ten days. No evidences of tuberculosis were then found in the animal or in a fragment of one of the nodes which had been introduced, while the histological structure of this node was the same as that of those removed at the operation. The

failure to find tubercle bacilli in the lymph nodes at either examination is the point upon which the authors base their belief in the non-tuberculous nature of the enlargement. While this may be just, it might be argued that the number and completeness of their observations and experiments were limited, and that the possibility of lymph-node enlargement due to presence of a toxin without the actual presence of tubercle bacilli in the nodes studied should be considered.

Nervous Exhaustion in Infants.—Sketching the histories of a few typical cases, W. P. Northrup (*Arch. of Ped.*, Jan.) utters a warning against the kind of treatment that produces the thin, alert, precociously brilliant infant which vomits or regurgitates its milk and lies awake day and night. In such cases it is most important to remove the child from every form of excitement, even excluding its parents, if necessary, and placing it in the care of a quiet, sensible, properly trained nurse. The condition is one of neurasthenia, with nervous dyspepsia, and quiet surroundings, especially after feeding, are the necessary means of cure.

Defective Children. Supplemental Schools for.—In an editorial (*Arch. of Ped.*, Jan.) L. Pierce Clark advocates the establishment of supplemental schools for slightly defective children who do not need the care of idiots and imbeciles, such schools forming part of the public school system. Every backward child should be examined carefully by a board of alienists, and the work assigned accordingly and changed from time to time after re-examination. The concrete should be uppermost, especially in the beginning work. The methods should be practical, industrial and manual in character. The regular school system with its early use of abstract teaching begins at the wrong mental end of training the deficient child.

Fever and Feverishness in Children.—Charles W. Chapman (*Brit. Jour. of Children's Diseases*, Jan.) says that acute illnesses may occur during the dentition period and that the fever which then occurs is totally unconnected with teething. The rule should be not to credit the teeth with being the *fons et origo mali* until every probable cause for the fever has been eliminated. Tonsillitis is a frequent cause of fever in children and may furnish a clue to the diagnosis of organic heart disease or acute articular rheumatism. Gastrointestinal irritation is a frequent cause of fever, as exposure due to insufficient protection of the abdomen and legs by clothing may be. Bronchopneumonia and pneumonia must always be searched for in febrile cases in which a temperature above 100° is not accounted for.

Hemorrhage of Syphilitic Origin in the Newborn.—W. Reynolds Wilson (*Arch. of Ped.*, Jan.) says that syphilis in itself, where it can be proven to exist, is in all probability not the primary cause of hemorrhage. It is more likely that the constitutional effects of syphilis underly the degenerative changes in the blood and vessels which lead to it. Among 3,364 children born at the Phila-

delphia Lying-in Charity in three years there were forty-five cases of hemorrhage, mostly fatal, and in ten of these cases a history of parental syphilis or clinical or post-mortem evidence of this disease in the children was obtained. After describing the character of the hemorrhages into various structures, the writer states that the tendency to bleeding hinges primarily upon the comparative heightening of arterial pressure in the newborn. A more direct cause must, however, be looked for, otherwise the common interference with the circulation during labor would frequently result in hemorrhage. The arterial changes in syphilis are not sufficiently distinctive to account for the tendency toward bleeding. It seems more likely that the relationship between the character of the blood and the containing capillaries is disturbed, the coagulability of the former being reduced. The infectious cause of purpura has been established in some instances, but it must be remembered that during the last few days of life, bacteria, especially the colon bacillus, may pass from the intestines to the blood. The presence of microorganisms does not exclude syphilis. Hemorrhage appears usually in children who do not present the characteristic signs of syphilis. When this rule does not hold good the congenital manifestations such as pallor, rhagades, shrunken skin, are more often observed than hereditary signs such as eruption and snuffles. Some believe that jaundice is a primary condition, which is followed by hemorrhage due to its toxic effect. It seems more likely, considering the number of cases of jaundice without hemorrhage, that it is secondary to the blood changes which cause hemorrhage. Syphilitic children with evidences of internal hemorrhage require prompt treatment, oil baths alternating with mercury. Rest is the first indication. For fever the ice cap is indicated, as it is an intracranial bleeding. In extensive skin hemorrhages inunctions should be omitted. In severe cases of melena peristalsis should be encouraged, giving nourishment in small quantities and applying dry warmth to the body. Give internally: suprarenal extract gr.ss repeated; adrenalin solution, 1-1000 gt.i repeated; gelatin water ℥ii to oi; fluid extract ergolin one drop doses; or calcium chloride gr.ss every two hours.

Gastrointestinal Hemorrhages of the Newborn.—False melena, due to bleeding from the mother's nipples during nursing, swallowing of blood during labor, excoriations of the child's mouth during breech extractions, or operative division of a frenum for tongue-tie, must be distinguished, says Lop (*Presse Médicale*, Sept. 21, 1904), from true melena. The latter is most often due to syphilis, and even in the absence of family history or physical evidences of this disease should be treated as such. The prognosis of gastrointestinal hemorrhages is always serious on account of the resulting anemia, even if death does not occur at once. The immediate treatment includes hot applications, cutaneous friction, the incubator, ingestion of boiled water in abundance instead of milk, injections of 20-40 c.c. of normal saline solution to which a little brandy may be added, morning and evening. Ergot, per-

chloride of iron, etc., may be given, but the writer's preference is for calcium chloride in doses of $\frac{1}{2}$ -2 gm. a day. Active anti-syphilitic treatment should also be instituted.

Treatment of Infantile Syphilis.—In an editorial (*Arch. of Pediatrics*, Oct., 1904) W. S. Gottheil favors immediate mercurial and iodide treatment of the mother when pregnancy is determined, if either she or the father is syphilitic. Since syphilitic nursing infants do recover while medication is administered to the mother, the latter should receive the approved treatment for the disease though she may show no signs of it. The child usually requires more active treatment, however. Hypodermatic administration of mercury is too severe except in the worst cases; oral treatment may cause gastrointestinal disturbance, so not more than gr. $\frac{1}{4}$ -i of mercury with chalk should be given three times a day. Inunctions usually cause cutaneous inflammation, but in a mild case one-half dram of white precipitate ointment made with lanoline may be spread on a cloth, worn next to the skin under the bellyband, and changed twice daily. A varying proportion of mercurial ointment may be added if more energetic action is required, and in children one year old the pure mercurial ointment may be used. For severe cases, especially with cutaneous lesions, he gives baths for 10-15 minutes once or twice a day in a solution of gr. x-xx of bichloride or sublamin 3ss. in a wooden wash-tub of warm water, keeping the fluid away from the face. Iodide in the later stages may be given through the mother's milk or by mouth in doses of sodium iodide up to gr. xv-xx three times a day. Local lesions may often be avoided by cleanliness of skin and mucosæ, especially where soiled by excreta. Silver nitrate gr. x to the ounce for mucous patches; 10 per cent. solution of oleate of mercury in oleic acid for the nose; calomel and starch, equal parts, as a dusting powder for condylomata and moist papules, pustules, etc. Treatment, begun before birth, if possible, should be continued for three years with intermissions, and longer if symptoms persist, stopping after one year of freedom from any symptoms, and beginning again if they reappear.

Fracture of the Femur in a Hemophylic.—Keith Monsarrat (*Brit. Jour. of Children's Diseases*, Nov., 1904) records a case of fracture of the middle of the shaft of the femur in a boy eight years of age, who had been knocked down by another boy. The deformity with an inch of shortening was corrected and splints applied. During the next few days there was much pain and swelling at the site of fracture. A week later the swelling was still increasing, and the leg was suspended vertically above the bed. Temperature rose steadily each evening to 102° three days later, and pain, tenderness, and fluctuation seemed to point to an inflammatory process. The appearance of a discoloration over the left radial pulse led to inquiries, through which a history of previous hemorrhages from nose and mouth, one lasting a week after tooth extraction in spite of plugging, and frequent sudden onset of painful swelling of a knee joint during the night. There

was no family history of hemophilia. While in the hospital bruises followed any slight pressure, and a hemophilic knee joint developed. Union without shortening occurred rapidly at the point of fracture, it being firm four weeks after the accident.

Valvular Obstruction in the Urethra.—C. A. Morton (*Brit. Jour. of Children's Diseases*, Nov., 1904) found at the autopsy upon an infant of thirteen months, with systitis and pyelitis, a small valve-like fold in the roof of the urethra just beyond the vesical orifice. It was directed downwards and backwards, so that although the passage of urine was much interfered with, a catheter was not obstructed.

Ill-developed Tooth as Forerunner of Harelip or Cleft Palate.—R. Clement Lucas (*Brit. Jour. of Children's Diseases*, Nov., 1904) adds to a previous record of three cases two further observations of defective upper lateral incisor in the mother on the same side as the harelip or same with cleft palate in the child. In the earlier cases he had noted the absence of a lateral incisor tooth. He believes that the absence or ill-development of a lateral incisor in either father or mother is a danger-signal for succeeding generations, especially if marriage occurs between two persons possessing such a defect, or if there is deprivation of proper nutriment during pregnancy.

Foreign Bodies in the Eyes of Children.—Sydney Stephenson (*Brit. Jour. of Children's Diseases*, Nov., 1904) calls attention to the necessity of careful inspection of all parts of the eye, including the superior cul-de-sac, in children with any ocular trouble, as foreign bodies are often overlooked since they cannot make complaints. Even in those old enough to do so, large foreign bodies may be present without causing pain. With young children a general anesthetic is necessary in difficult cases for inspection and removal of the objects. A polypus of the conjunctiva almost invariably denotes the presence of an embedded foreign body. The symptoms of foreign body in the eye do not simulate those of conjunctivitis, but are more like those of corneal inflammation, including photophobia, ciliary redness, lachrymation, blepharospasm, and pain.

Acute Otitis in Children.—A study of fifty-one operative cases by Charles G. Kerley (*Arch. of Pediatrics*, Oct., 1904) shows that the physical condition of the child appeared to exert no influence upon the susceptibility; two-thirds were strong, well nourished children. In none were the tonsils sufficiently involved to require removal. Six cases had sufficient nasal obstruction to suggest the presence of adenoids. The fact that thirty-eight of the cases, 72 per cent., developed with or followed catarrhal inflammation of the upper respiratory tract, emphasizes the necessity for frequent aural examination during and following such disorders, particularly when there is an elevation of the temperature. The most interesting clinical feature was the absence of pain or local signs of disease in thirty-four, or 67 per cent. The ears were

examined simply because of the presence of unexplained fever. Six of the mastoid and jugular bulb cases followed catarrhal colds; one followed measles. Bacteriological examination showed the presence of streptococci in pure culture with staphylococci in all but one case, which was a pure staphylococcus infection. In these complicated cases there was never pain as shown by crying or restlessness, nor any sign of discomfort elicited by manipulation; nor was there evidence of involvement of the deeper bony parts through swelling or deformity. In only one case were there signs of mastoid disease. In three mastoid cases the diagnosis was made by the continuation of the temperature after incision of the drum membrane, a prolapse of the posterior-superior wall of the canal and absence of other clinical signs to explain it. In infants and young children temperature is always present when there is confined pus in the mastoid. In the cases with jugular bulb involvement the diagnosis was made by the rapid rise and fall of temperature following upon acute streptococcus infection of the middle ear and without other assignable cause for the fever.

Changes in Finger Nails After Scarlet Fever and Measles.—Lines, ridges and furrows are not uncommonly seen in the nail of the affected finger after local lesions such as dermatitis, erysipelas and paronychia, but in these cases the changes are confined to these fingers. E. Feer (*Münch. Med. Woch.*, Oct. 4, 1904) has observed changes in the nails after scarlet fever and measles which he regards as characteristic of these diseases. In typical cases there is seen, four or five weeks after the beginning of the scarlet fever, a transverse furrow or ridge near the base of the finger nails, usually curved with the convexity toward the distal extremity of the finger. With the gradual growth of the nail this line moves toward the end of the finger. These lines are most constant in the thumb nails, and is more often found in older than in very young children, being nearly always present in those over ten years of age. Its intensity varies also with the severity of the exanthem and with the thickness of the nails. The writer has not examined the toe nails regularly, but often found the lines in those of the great toes, seldom in the others. After measles similar but less marked changes occur, and much less constantly (in three of his last fourteen cases). In these cases the ridge is more of a flat elevation, with the newly formed portion of the nails less polished than the old. The chief value which the writer attaches to these observations is that he considers it possible in this way to discover the cause of complications such as endocarditis or nephritis when the case is first seen after an illness in which it was unattended. He has not seen these nail changes in other general diseases, but has not studied the matter systematically. They have been observed occasionally by others in typhus, gastric diseases, pneumonia, erysipelas, epididymitis, suppurative parotitis, rheumatism, etc.

The Rachitic Hand.—Henry Koplik (*Arch. of Pediatrics*, Oct., 1904) describes as existing in some very marked cases of rachitis

a peculiar incurvated appearance of the fingers at the situation of the joints with unusually long and tapering fingers. The radiograph shows thickening of the phalangeal shafts with the distances between the extremities of the phalanges greater than in the normal hand.

Treatment of Nocturnal Incontinence of Urine.—Cantas (*Presse Médicale*, Oct. 1, 1904) speaks most highly of the treatment of nocturnal incontinence of urine by epidural injections in the sacral region. He applied the method in fifteen cases, of which thirteen were nocturnal and two both diurnal and nocturnal, in all cases of several years' duration. Injections of 10 c.c. were found more effectual than those of 5 c.c., and those of cocaine solution 1-500 more so than those of normal salt solution. A certain tolerance was acquired by frequent repetition, and they should be given at as long intervals as possible. The number of diurnal micturitions was decreased. The number of injections employed in each case varied from 1 to 6. Three and a half months after the beginning of treatment the fifteen cases showed thirteen cured (87 per cent.) and two improved.

Abdominal Cutaneous Reflex in Typhoid and Appendicitis.—Stimulation of the skin of one side of the abdominal wall, in older children chiefly, as by a rapid stroke with a finger-nail, causes a reflex muscular contraction on that side of the abdomen. Among twenty-six cases of typhoid in older children, J. A. Sicard (*Presse Médicale*, Jan. 11) noted an absence or marked diminution of this reflex on both sides in twenty-two cases. This condition lasted through the entire febrile period and became normal with the temperature, or two or three days later. In two cases the modifications were temporary; in two others the abdominal cutaneous reflex remained unchanged throughout. The reflex may be absent on only one side or only in the lower or middle portion. In appendicitis the reflex is usually absent upon the right side and normal on the left. During convalescence the absent reflex rapidly returns. In one case with threatened peritonitis and marked fever, the reflex was bilaterally absent. Absence of reflex may occur independently of spontaneous or induced abdominal pain.

Repeated Cesarean Section.—T. von Leuwen (*Ann. de Gyn. et d'Obst.*, Oct., 1904) has investigated the literature of the clinics connected with the Universities of Holland, and finds reports of 117 such cases. Post-operative troubles appear to be rare. Fertility is not compromised. In 194 cases of pregnancy after Cesarean section, 24 instances of incomplete healing of the uterine wound are found: 4 ruptures through the cicatrix, 14 cases of thinning of the entire scar, 6 of a portion. In 117 cases of repeated Cesarean section peritoneal adhesions were discovered in 76 or 67 per cent. The writer cannot regard these, however, as the cause of abortions, as in a study of the histories of 1,489 pregnant women in the obstetrical clinic of Utrecht he found 565 abortions in 7,718 pregnancies (7.5 per cent.), and only 8 in 331 pregnancies after Cesarean section (2.4 per cent.). Imperfect healing of the

uterine wound and formation of adhesions are caused in some cases and possibly in others by infection. In 59 cases he found an axillary temperature above 37.5° C. (99.5° F.). The mortality of the repeated operation is less than that of the first, only 3 deaths in 104 of the repeated operations, probably because a woman who has once had difficulty, seeks assistance early. The writer's conclusion is that sterilization of the woman after the operation, in order to protect from the danger of recurrence, is not legitimate unless the uterus is defective.

Extra Uterine Pregnancy.—J. Potocki and X. Bender (*Ann. de Gyn. et d'Obst.*, Oct., 1904) furnish the history of a case of ectopic gestation ruptured at the sixth or seventh month, without serious symptoms. Secondary abdominal pregnancy with death of the fetus occurred. Ten months after the beginning of pregnancy an operation was performed and the fetus was found lying free among the intestines. Recovery.

Tetany in Pregnancy.—The occurrence of tetany in five consecutive pregnancies, is reported by Hans Völker (*Monatschr. f. Geb. u. Gyn.* Bd. XIX., H. 1). The woman was thirty-nine years of age, and had had four normal pregnancies and labors previously. The attacks of tetany began in the fingers of the right hand, then extended to the right and left arms and the face. They occurred at intervals of about eight days, and ceased after labor, to recur with a succeeding pregnancy. Chloral hydrate and bromides had no effect in preventing attacks.

Puerperal Tetanus.—Lop (*Bull. de la Soc. d'Obst. de Paris*, No. 2, 1904) records a case of tetanus supervening thirty-two days after labor, which had been induced at the eighth month, for severe albuminuria in twin-pregnancy. None of the attendants had been near a previous case of tetanus, and there had been no visible wounds of the vagina, vulva or other external portions of the body. The infection probably occurred through the uterus. Death occurred in three days.

The Blood in Puerperal Infection.—Potocki and Lacasse (*Ann. de Gyn. et d'Obst.*, June, 1904), record a number of personal observations from which they conclude that the prognosis must be considered doubtful in the presence of a leucocytosis of over 25,000 to 30,000, with over 80 to 80 per cent. of polynuclear leucocytes and decrease or disappearance of eosinophiles. In regard to treatment, they would reserve laparotomy, followed by hysterectomy, if necessary, for severe cases in which eosinophiles are absent.

Free Bodies in the Fallopian Tube.—In a tube removed during total hysterectomy for carcinoma of the uterus, J. J. Fedorow (*Ann. de Gyn. et d'Obst.*, Sept., 1904), found fifteen polygonal, ovoid or spherical bodies. Microscopic examination showed these to be apparently benign papillomata of the tube which had become detached from the tubal mucosa.

THE AMERICAN
JOURNAL OF OBSTETRICS
AND
DISEASES OF WOMEN AND CHILDREN.

VOL. LI.

APRIL, 1905.

NO. 4.

ORIGINAL COMMUNICATIONS.

**HAND STERILIZATION, WITH SPECIAL REFERENCE
TO THE USE OF OIL OF CLOVES.***

PART I.

BY

J. CLARENCE WEBSTER, M.D.

In carrying out hand sterilization, mechanical and chemical methods are employed.

1. *Mechanical*.—The careful use of a stiff nail brush with soap and hot water results in the removal of microbes lying on the surface and in the detachment of superficial epidermal cells and grease with contained organisms.

It is held by some that this method suffices to produce practical sterilization. Such a view is, however, erroneous. While it is certain that prolonged washing of the hands in hot soapsuds reduces the number of microbes in the skin, the time required to establish sterility is far beyond the limit of practicability. A laundry woman's hands at the end of a day's washing have probably fewer germs between the cells of the epidermis, in the sweat ducts and sebaceous follicles, than may be found in those of a

* Read before the Chicago Gynecological Society, January 20, 1905.

surgeon after he has prepared himself for an operation by any of the present methods of sterilization.

It is, however, impossible to produce such a state of skin by scrubbing for five, ten or fifteen minutes, or any period of reasonable length. Moreover, this rapid method is very apt to irritate the hands, both by the friction of the brush and by the action of strong alkali in the soap. Apart from the personal discomfort thus produced the skin is roughened and covered with partly detached epidermis containing microbes, and may thus be a source of danger if the naked hands be used in operating. When the skin tends to become thus affected, it is advisable, as suggested by Haegler, to rub the surface with a dry rough cloth in order to remove the shreds of epidermis and render it more smooth. Various operators have advised the use of sand, marble dust, fine wood shavings, etc., instead of the nail brush, and have stated that better results may be obtained. Careful bacteriological experiments show that this is not the case. Cultures may be obtained from the skin as readily after the use of these substances as after scrubbing with the nail brush. Their one advantage is that the skin is usually left smooth after they are employed.

Special soaps have also been introduced, *e. g.*, soft, green or strongly alkaline soap, Schleich's marble dust or antiseptic soaps. These are unnecessary. Any ordinary soap which forms a good lather and contains sufficient free alkali to emulsify the fat in the skin is satisfactory. Any variety which is an irritant should be discarded. The uselessness of all soaps containing antiseptics may be demonstrated by careful bacteriological tests.

Many of the variations in the opinions given regarding the sterilization of the hands are due to faulty test-methods.

Thus statements based on the study of the dry skin are certain to be fallacious. When a bacteriological test is to be made, the surface should be well moistened with sterile water. The method of stroking the surface with a platinum loop, a narrow, dull-edged spatula or a piece of cotton wrapped around a rod is entirely inefficient. A sharp-edged instrument capable of loosening the epidermal cells should be used, *e. g.*, Fürbringer's small pieces of hard wood or Leedham-Green's rough ivory ends, which, after application, are dropped into the culture medium. A long, stiff metal rod whose end is flattened like an arrow-head and having sharp edges, is also very suitable. Haegler has used short pieces of sterile silk ligature; these are well rubbed against the skin and

under the nails. As to a culture medium, that one should be employed which enables the observer to count colonies and so to establish some degree of comparative study.

Leedham-Green in his recent book strongly recommends tubes of agar-agar. Previous to their inoculation they are heated in order to liquefy the agar-agar, and then cooled nearly to the point at which solidification occurs. Inoculation is then carried out, the scrapings being distributed through the medium, and the tubes slanted until the latter is solid. They are then incubated at body-temperature for six days, after which germ colonies may be counted with a low magnifying glass. A fluid medium, like broth, is not advisable, nor is gelatine suitable, as it does not permit of incubation at body temperature.

2. *Chemical*.—A recapitulation and analysis of the various chemical methods used in hand sterilization are beyond the limits of this paper. A few general statements will suffice. Many erroneous views have been advanced, largely due to faulty laboratory methods. Tests of the skin made after the employment of antiseptics may be fallacious if sufficient care be not taken to eliminate entirely the influence of the antiseptic. An infinitesimal quantity of the latter, while having no germicidal influence, may prove inhibitory to organismal growth for several weeks in a culture medium. Thus Haegler has found that one part of corrosive sublimate in 200,000 of bouillon suffices to prevent the growth of staphylococci. A culture medium may therefore contain living organisms even when it appears to be sterile. In making tests it is consequently necessary to remove the antiseptic from the test object or neutralize its action. That it is not very easy to accomplish this is proved by recent experiments. Indeed, Leedham-Green states that the examination of the culture tubes after six days is not sufficient in cases in which antiseptics have been used. Frequently, after several weeks, evidence of germ growth may be obtained, owing to the gradual lessening of the inhibitory influence of the contained antiseptic.

The work of Paul and Sarwey, Haegler, Schaeffer, Leedham-Green and others has demonstrated that the ordinary operating-room methods are to a considerable extent inefficacious in rendering the hands sterile, either by removing germs from the skin or by destroying those still present after scrubbing. It seems absurd that so many operators are satisfied with immersion of the hands for a few minutes in chemical solutions in which many

germs and spores may live for hours or days. Above all does it appear illogical to use aqueous preparations which cannot penetrate the epidermis because of the compact arrangement of the cells and the presence of fatty matter. A very favorite lotion is a watery solution of corrosive sublimate (1 in 1,000), but its weakness has been so often demonstrated that it is a wonder that any operator ever uses it. Leedham-Green inoculated silk thread with cultures of staphylococcus aureus, and found that the organism developed in broth after five, ten and fifteen minutes' immersion in the sublimate. Opitz also found that staphylococcus could be made to develop even after thirty minutes' immersion in the same solution.

Some variations in the results obtained by experiments may be expected, because of the difficulty of establishing uniformity in conditions. Different cultures of an organism vary in their susceptibility to the antiseptic. The age of the growth, the temperature at which it had been kept, the nature of the culture medium, the number of organisms on the test objects and the temperature at which the latter are dried, are the factors which determine the variations.

Thread tests, such as those described, are not comparable to the conditions present in the hand sterilization methods of the operating room. In the former the antiseptic has free access to the organisms; in the latter it cannot even reach the microbes, protected, as they are, by the fatty and albuminoid epidermis. If the test objects, after being soaked in the germ cultures, are coated with oil and afterwards placed in the watery antiseptic solution, the latter may exert no influence until hours or days have passed, as Haegler and others have found.

It is, indeed, quite evident that an antiseptic to be capable of sterilizing the skin must be one which can penetrate the epidermis.

Fürbringer first pointed out the necessity of dissolving the fatty material in order to allow the antiseptic solution to act, and he introduced alcohol for this purpose. In recent years alcohol has been widely employed alone or in conjunction with other solutions. Reinicke and Ahlfeld have been enthusiastic advocates of the value of alcohol in sterilizing the skin, but a large number of authorities have raised many doubts as to its efficacy. Leedham-Green's extended experiments have clearly proved that the skin may be well cleansed by scrubbing it with alcohol, the number of organisms being reduced; the longer the application, the

better the results. In a very considerable percentage of his cases, however, the skin was not rendered sterile, and it was found that the prolonged use of the alcohol, *i. e.*, more than five minutes, caused considerable pain, roughened the skin and even produced eczema.

Regarding the germicidal power of alcohol, it seems clearly established that absolute alcohol is very weak, but that the diluted fluid has some action (Epstein, Haegler, Minervini, Leedham-Green). The latter states that the 70 per cent. solution has a greater germicidal power than a watery solution of bichloride or biniodide of mercury (1 in 1,000), or of permanganate of potash (saturated). It may destroy staphylococci and other non-spore-bearing organisms in two to five minutes if the latter are not abundant and are easily accessible; under other circumstances a much longer period is required.

The chief value of alcohol in hand-cleansing, according to Schaeffer, is its power of detaching the flakes of epidermis which have been loosened by previous scrubbing in soap and water, and not its influence as a germicide. Leedham-Green points out that often if the spirit in which the hands have been cleansed be filtered living organisms may be obtained from the sediment, even though the tested hands have proved sterile.

The astringent hardening influence of the alcohol must also be considered. Immediately after its use the skin may be apparently sterile, whereas after macerating the latter in albuminous fluid or normal saline solution cultures may be obtained in a considerable percentage of cases.

Fürbringer's method of washing the hands in corrosive sublimate solution after the preliminary use of alcohol is undoubtedly the one most widely employed at the present day. While it is more efficacious than alcohol alone or than potassium permanganate and oxalic acid, it fails in effecting perfect sterilization of the skin in a considerable percentage of cases. The best results are obtained when the period of application is lengthened, but undue prolongation is apt to injure the hands.

For several years the writer has been experimenting for the purpose of attaining to greater perfection in the sterilization of the hands. He has held that the ideal cleansing agent must be a solution capable of dissolving fatty matter and of penetrating the epidermis, strongly germicidal when applied for a few minutes, and non-injurious to the skin.

In 1897 I obtained a preparation from England named crenasol which acted very satisfactorily. Its composition was practically the same as pure creolin, but with less soda. Two years ago, however, the export of the fluid to this country ceased, and I had recourse to a mixture of creolin (8 parts) and glycerine (2 parts). This is the strongest solution of creolin which can be rubbed into the skin for three or four minutes, without causing considerable pain and irritation. Some people cannot even endure this strength.

In 1904 I began to use ordinary unpurified clove oil, and I have obtained with it better results than any other method has given. I prefer it to the purified clove oil, because it is less expensive and probably a better germicide, its impurities being acid in nature. It is a powerful solvent of fats, and penetrates deeply into the skin. It is used as follows:

The hands are scrubbed for five minutes with any good soap and hot water, the latter being frequently changed. A boiled stiff nail brush is used. The skin is then dried with a sterile towel, and rubbed for one minute with alcohol in order to remove any remaining moisture. When it is dry the clove oil is rubbed into the skin for four or five minutes, and afterward washed off with alcohol.

Occasionally there is a disagreeable burning sensation, but I have never known any injury to result. This unpleasantness is usually more marked when the alcohol used is considerably below the absolute strength.

The hands thus cleansed are thoroughly rubbed with sterilized talc powder and covered with smooth, dry rubber gloves, which have been boiled for fifteen minutes.

This method certainly reduces to a minimum the risk of infection from hands. It must be adopted by the operator, his assistants and nurses.

I object strongly to the use of wet gloves, because the hands become macerated, and if an injury to the glove is undetected during the operation the softened skin may more readily yield organisms which have not been destroyed, and these may contaminate the patient.

When the dry method is adopted the skin of the hand is the same at the end of the operation as at the beginning. It is very smooth, the sterile talc having been rubbed into all the irregularities. An operator should wear gloves of medium thickness, which

are made from a model of his hands. In this way a perfect fit is obtained. If the material be too thin it is easily ruptured. I have succeeded in obtaining a quality which affords sufficient strength and does not interfere with the sense of touch. If critics who oppose the use of gloves on the ground of interference with tactile sensibility would exercise care in the selection of the proper grade of rubber, they would do the cause of aseptic surgery a good service.

The writer has used gloves for eight years with the most satisfactory results.

He desires to protest strongly against the practice of those who use them without preliminary efforts to sterilize the hands as carefully as possible. This extra precaution takes time and trouble, of course; but it is a safer procedure than the other. It is difficult to keep gloves in perfect order, and small holes are often not discovered during operations. If the skin be merely washed in soap and water it is dirty and dangerous, even though the opening in the glove be in one finger only. In an operation lasting one or two hours, it is conceivable that a considerable number of organisms might be washed through the hole into the patient's tissues.

Various surgeons have suggested the use of "hand coatings" instead of gloves, *e. g.*, wax, varnish, paraffin, gutta percha solution. These are apt to crack and peel off in long operations, and are not as practicable as suitable rubber gloves. The great advantage of gloves over naked hands is that the surgeon may handle all classes of cases with impunity. It has been clearly demonstrated that the difficulty of cleansing the hands is greatly increased when the latter have been in contact with actively infective fluid or tissues. If, for example, an abdominal operation be performed in a case of septic peritonitis, the operator using his naked hands, it is certain that he should not operate again until several days have elapsed and frequent hand-cleansings have been carried out. If gloves are used, no such delays are necessary. The hands are kept free from contamination.

HAND STERILIZATION BY OIL OF CLOVES.

PART II.

BY

E. ROSNOW, M.D.

Some months ago at Dr. Webster's suggestion I began a series of experiments to test the antiseptic value of oil of cloves in the sterilization of the skin. In order to show experimentally the effect produced by the various steps in the sterilization of hands in surgical work it was deemed advisable to make cultures (1) before scrubbing, (2) after thorough scrubbing, and (3) after both scrubbing and the use of the antiseptic. This was carefully done with each of the following methods:

- (1) The clove oil method introduced by Dr. Webster.
- (2) The creolin method.
- (3) The bichloride method.

The technic consisted essentially of the following steps:

To make the tests of the unscrubbed hands comparable with those of the scrubbed hands, etc., they were moistened in sterile water previous to making the culture. The cultures in each instance were made under similar conditions as possible, in the following manner: With a rather sharp edge of a blade 2 cm. in length, prepared by flattening a rather heavy copper wire, the dorsal, palmar, and the webbed surface of the hands, including crevices at the margin and under the finger nails, were firmly scraped until the superficial scales of epithelium thus removed covered the blade. This material was then inoculated into the media. Surface inoculation upon agar was used principally, although bouillon cultures were employed as controls.

This method, I believe, is more reliable than the method of applying to the skin a cotton swab moistened in a culture medium and then inoculated, as has been done so frequently by former investigators. By this method we not only scrape off the superficial epithelium, but as a result of the firm pressure used, extrude any bacteria that may lodge in the deeper layers of the skin within the hair follicles or ducts of the sweat glands. The utmost precautions were taken to avoid any error, such as contamination

during inoculation of media, etc. Before negative results were recorded the cultures were incubated for at least four days.

Table showing summary of results of cultures :

	Before Scrubbing. (100)*	After Scrubbing. (100)	AFTER ANTISEPTIC.		
			Clove oil. (45)	Creolin. 80% (30)	Bichloride. 1-2000. (25)
Average number of colonies per culture	450	127	.04	2	21
Percentage of positive results	100	88	2	26	40
Maximum number of colonies per culture	3000	1000	2	25	150

* Figures in () indicate number of tests made.

The above table is self-explanatory. A study of it will show a marked reduction in the number of bacteria developing after the use of the scrubbing brush, and still more after the use of the various antiseptics. The question may at once be raised, Is this a result of an error in technic? Have we thoroughly freed our hands from the antiseptic in question before making the tests, or is the reduction in colonies the result perchance of carrying with the inoculated material enough antiseptic to prevent the growth of bacteria that may have survived the action of the antiseptic on the skin? None of these objections apply for the following reasons: The excess of antiseptic was first gotten rid of with a sterile sponge, then thoroughly washed with much friction in a large quantity of alcohol, used only once, dried with a sterile towel, and then thoroughly rinsed in sterile water to get rid of the alcohol before cultures were made. In the bichloride method this certainly was not an error; and since oil of cloves and creolin are also soluble in alcohol, practically all of the antiseptic must have been removed by this treatment. Then, again, such a high dilution of the media and the material inoculated would make this possible source of error even more unlikely. In the light of these facts, it seems that the test has been a fair one, and that the number of colonies which developed as shown in the table indicates as near as possible the number of living bacteria present upon the skin after each step. Again, it may be argued that because the bacteria did not grow is no indication that they were dead; however, this much is certain—that bacteria from the skin which will not develop in the most favorable media for their growth certainly will do no harm when inoculated into a wound with fluids which possess a rather high degree of bactericidal power.

These experiments show, as is well known (1) that the skin ordinarily harbors a large number of bacteria, (2) that thorough scrubbing with green soap and brush removes large numbers of bacteria, but by no means all, and (3) that the various antiseptics destroy or dispose of a still larger number—and of those antiseptics tested, clove oil seems the most efficient.

The question which still confronts us is this: Are the good results by this method due directly to the germicidal properties of clove oil, creolin and bichloride (1-2,000), or is the difference explainable by the volatile and penetrating qualities of the antiseptics in question, and hence more the result of physical than chemical action? It is well known that bichloride used in this way is very inefficient, and needs no more discussion here.

The antiseptic and penetrating properties of creolin in the strength used is certainly greater than bichloride, but not so great as clove oil, as shown by these experiments.

In order to show the antiseptic power of clove oil, a series of experiments were undertaken, which consisted in bringing various organisms into contact with the oil. The method employed was the infiltrating of silk threads with the various bacteria in question. In order to subsequently get a penetrating action of the oil, it was necessary to get rid of the moisture in the thread. For this air-drying was found to be most reliable. With all but the anthrax spores we were handicapped upon the one hand by not being able to use enough heat to be sure that the thread was thoroughly dry without destroying the micro-organisms, and on the other hand, after soaking in the oil for the required period, in order to make culture reliable it was necessary to get rid of the oil, which was done by immersing in alcohol for ten minutes. It is thus evident that it is exceedingly difficult to determine exactly the antiseptic value of clove oil. However, by the use of numerous controls I have been able to show that the pneumococcus and streptococcus are destroyed by this method in the same length of time that is employed in the process of sterilizing hands—that is, by using the oil for five minutes. The cultures made with the pneumococcus were negative after contact with clove oil for two minutes. Not so with the streptococcus. That the negative culture of it after five minutes was not due to the oil which might still have been present or to the alcohol is shown by the fact that the controls and soaking in clove oil for two minutes gave positive results. Typhoid bacilli were destroyed in twenty minutes. The

staphylococcus aureus and albus were greatly reduced in number in thirty minutes, but not all the bacteria were destroyed. This was also found to be true of anthrax spores, which resisted fifteen minutes' boiling, careful controls being made in every instance. That the diminution of colonies was not the result of any antiseptic carried over is proven by the fact that where growth was present at all it was present immediately about the thread implanted in the media. Now it is well known that the bacteria of the skin, notably the staphylococcus epidermidis albus, which is present in the deep layers, is of very low virulence, and would it not also then be of low vitality—resisting only feebly the action of germicides? And in this way may not the clove oil, even though it does not destroy all the bacteria from a culture in so short a time, on account of its volatile and penetrating qualities, reach where the other antiseptics will not, and thus destroy them? Whether this be true or not is very difficult to answer; but that it is in some way either physically or chemically more efficient seems certain. To emphasize this point, I wish to mention the researches of A. H. Peck (*Jour. Am. Med. Assn.*, XXXII, 6-11), who found that clove oil very promptly stopped pus formation over an ulcerated area where a 1-1,000 bichloride solution failed for days.

Sterilization of Catgut.—Having shown first the efficiency of this antiseptic for the sterilization of skin, and, second, that highly resisting spores were diminished in number by a 30-minute contact, it occurred to Dr. Webster that this might also be an efficient and convenient method for sterilizing catgut. To test this another set of experiments was instituted. The various sizes of catgut, as obtained from the market, were rolled into circles in convenient lengths, as done for surgical work, and without any preparation whatever were dropped into clove oil and allowed to remain there for eight days. Controls were made to show that the gut contained numerous bacteria at first. After the catgut remained in the oil of cloves for eight days it was carefully taken out of the jar with sterile forceps and laid between two sterile towels to allow the excess of oil to be absorbed. It was then placed in a large receptacle of 95 per cent. alcohol for about two hours in one series of experiments, and for about six or eight hours in another series to remove the oil. (At the time this paper was read an objection was raised that the negative cultures might be the result of the oil which the alcohol failed to

dissolve. For this reason an additional set of experiments was undertaken in which three changes of alcohol was employed, and again with identical negative results.) This was considered sufficient, since clove oil is very soluble in alcohol (equal parts). It is considered sufficient further, because a set of control experiments where short strands of catgut were inoculated with anthrax spores, placed in the oil after thorough drying for thirty minutes and less, and simply passed through alcohol, so that its solvent action continued for only a few minutes, gave positive results, even though the alcohol was not washed off in water. The growths were always most numerous along the strands of gut. This was true also of other bacteria tested. Hence it would seem that the washing of the gut in alcohol for from six to eight hours must be amply sufficient. The alcohol was gotten rid of mostly by evaporation between two layers of sterile towels. In a number of experiments the gut without further treatment was placed in bouillon, both flasks and tubes being used, with the result that in no instance was there any growth. It was still to be shown that the gut thus treated was not only sterile upon the surface but in the interior as well. This was done by a very similar set of experiments, but instead of implanting it into bouillon immediately, it was scraped with scalpel, etc., until the gut was a fuzzy shred, was then planted into bouillon, and in no instance from more than thirty cultures did a growth appear.

One more experiment was deemed necessary to prove to our satisfaction that this method is safe under all circumstances. The above experiment was repeated exactly, except that the catgut was first allowed to remain in a rich, spore-containing culture of bacillus anthracis, which resist boiling for fifteen minutes, previous to placing into clove oil. In five days the gut was sterile in every instance. From four to seven days were allowed to elapse before cultures were considered positively negative. From day to day cultures were taken. The negative results, therefore, are not due to the carrying over of clove oil, because (1) controls when the alcohol was in contact with the oil containing catgut for a much shorter period gave positive results; (2) that it was not due to the alcohol which might not have completely evaporated is proven by controls where the strands of gut taken directly from the alcohol and planted upon agar and in bouillon gave positive results, and (3) the same bacteria inoculated into the media subsequently proved that it was not antiseptic, growth being obtained as readily as in fresh media.

POST-OPERATIVE COMPLICATIONS INVOLVING THE
BRONCHI, LUNGS, ETC.*

BY

G. BROWN MILLER, M.D.,

Washington, D. C.

AMONG the most frequent and serious complications which arise after operations are inflammatory conditions of the bronchi and lungs. The most important of these are bronchitis, pneumonia, pleurisy, acute edema, gangrene and abscess of the lungs, pulmonary emboli, and the lighting up of chronic tuberculous processes.

The rôle played by the anesthetic in the etiology of these diseases has never been definitely determined. Before the discovery of anesthesia lung complications caused a high mortality after operation, and some recent statistics of v. Miculicz and other German writers are extremely interesting as bearing upon the rôle played by ether and chloroform in the causation of such complications. Miculicz (*Centralbl. f. Chir.*, 1901, No. 29, p. 16) states that at the Breslau Clinic in 1,005 laparotomies and operations for strumous affections under general anesthesia, there was a pneumonic morbidity of 7.5 per cent. with a mortality of 3.4 per cent. In 272 cases operated upon under local anesthesia (Schleich's method) there was a morbidity of 12.8 per cent. and a mortality of 4.8 per cent. due to pneumonia. This increase, he thinks, was due to the nature of the operation and of the disease from which the patient was suffering, his cases where local anesthesia was employed being from the outset more prone to lung affections than those where ether or chloroform was used. There are other statistics which are equally as striking, and they all emphasize the fact that a large proportion of the more serious lung complications after operations are not due to the action of the anesthetic.

I have been unable to find satisfactory statistics as to the frequency of pulmonary and bronchial complications in general after operations. In approximately 8,000 to 9,000 cases of general anesthesia, of which over 7,000 were operations, in the gynecological department of the Johns Hopkins prior to 1901, there were 17 cases of pneumonia, 18 of bronchitis without

*Read before the Washington Obstetrical and Gynecological Society December 16, 1904.

other lung affection, 16 of pleurisy, 6 of recognized pulmonary embolism, and one case of gangrene of the lungs. These statistics, while not extremely accurate, are as much so as statistics of the kind can be. It is not possible to always recognize the exact lesion in cases of the kind which recover, and many of those who die do not come to autopsy. In most of these cases the diagnosis, was made after consultation with experts in physical diagnosis, and the symptoms, as stated in the notes, have been carefully compared with the diagnosis. Where autopsies took place the anatomical diagnosis was taken. According to the above statistics pneumonia occurred once in every 523 cases of general anesthesia; pleurisy, once in every 566 cases; bronchitis, once in 500; and pulmonary embolism, once in every 1,333 cases. Gerulanos (*Deutsche Zeitschr. f. Chir.*, 1900, Bd. LVII., p. 361) states that in the surgical clinic at Kiel, 7 of 95 deaths occurring after operations were due directly to lung complications.

There are some observations which apply more or less to all of the post-operative lung complications. The immediate effects of the anesthetic, especially ether, upon the mucous membrane of the air passages is doubtless largely responsible for many cases of bronchitis and edema of the lung. Lindemann (cited by Gerulanos and Hölscher (*Archiv. f. klin. Chir.*, Bd. LVII, p. 175) however, could not find in their experiments upon animals that ether ever produced an inflammatory action upon the lung itself. Chilling or catching cold, either through exposure in a cool operating room or after leaving a heated operating room and returning to a cold ward, is in many cases responsible for the pulmonary affection. Hölscher estimates that a patient loses from .1° c. to 3° c. of heat during anesthesia according to the length of time and the condition of the patient. Weak and feverish patients according to him lose more than strong and robust ones. This loss of heat would render the patient liable to pneumonia, bronchitis, etc., unless great care were taken to protect her from exposure to cold. The aspiration of mucus, vomitus, and saliva with the bacteria of the mouth and pharynx are responsible for many cases of affection of the lungs, bronchi, etc., which occur after operation. The congestion of the lungs caused by weak circulation; the recumbent posture; and the want of proper expansion of the chest and aeration of the lungs due to weakness, pain, tight bandaging, and distended intestines, prepares the ground for the infection. The excitement before the operation,

with the anxiety and unrest not only cause the patient to take the anesthetic worse than she otherwise would, but by producing a generally depressed condition render her more susceptible to other influences, such as cold. The amount and character of the anesthetic, the skill with which it is given, and the time of anesthesia play important parts. Alcoholic, fat, and plethoric patients require more of the anesthetic and are more apt to suffer with lung complications. The nature of the operation seems to play an important rôle in the causation of lung affections, certain operations as those for strangulated hernia being more apt to be followed by pneumonia, and those for myomata, etc., by pulmonary embolism. The frequency and importance of the smaller pulmonary emboli which do not cause instant death are underestimated by most observers, many of the post-operative pulmonary affections being of embolic origin.

Pneumonia.—The frequency of the occurrence of pneumonia apparently varies in different countries and in different clinics in the same country. This difference may be partly real but is in greater part only apparent. The difficulty in getting reliable statistics is obvious. It is not always possible to differentiate small bronchopneumonic areas from localized tuberculous processes, hemorrhagic infarcts, etc., and cases come to autopsy with post-operative pneumonia when the condition was not recognized during life. In this country a great many cases who die never come to autopsy, and we have to depend upon a clinical diagnosis. The number of the cases of pneumonia following operation depends also upon the nature of the operation, the methods of operating, the country, the season of the year, the anesthetic employed, and the manner in which it is given. Anders (*Univ. Med. Mag.*, Phila., 1897-8, X, 611) found in 12,842 cases of ether narcosis in Philadelphia 30 cases of pneumonia and 13 deaths. Prescott (cited by Osler) in Boston in 40,000 similar cases found only 3 cases of acute lobar pneumonia. Henle (*Centralbl. f. Chir.*, 1901, No. 29, p. 74), in von Miculicz's Clinic in Breslau, reports in 1787 cases of laparotomy and operations for hernia, 143 post-operative pneumonias with 65 deaths, and in 200 amputations of the breast, 2 pneumonias and one death. In 8,000-9,000 cases of anesthesia, representing 7,000 operations in the gynecological clinic of the Johns Hopkins Hospital there have been 17 cases of pneumonia.

The relative frequency of lobar and bronchopneumonia seems generally in favor of the latter.

In Henle's cases, of those which came to autopsy 7 were acute lobar pneumonia, 24 lobular or bronchopneumonia, and 17 pulmonary gangrene. In Gerulanos' 7 cases, 5 were bronchopneumonia, one gangrene, and one a pulmonary infarct. In 17 cases of Bloodgood, reported by Osler, 13 were bronchopneumonias and 3 lobar pneumonias. Kümmell (*Centralbl. f. Chir.*, 1901, No. 29, p. 78) reports 1070 laparotomies with 8 lobar and 21 bronchopneumonias. In our patients 9 were lobar, and 8 bronchopneumonias, one of the latter finally becoming gangrene.

The causes of pneumonia following operation may be divided into the predisposing and the exciting. The predisposing causes are old age; intemperance; weakness or disease of the heart, and blood vessels, and diseases of the kidneys; the recumbent posture; the inability to cough up foreign substances and the imperfect expansion of the lungs on account of pain, distension of the intestines, tight bandaging, coma, and the use of narcotics; edema of the lungs caused by the anesthetic; excitement, shock, etc.; preexisting disease of the bronchi, nose or mouth; chilling of the body during or after operation; and the presence of foreign substances such as mucus and vomitus. The exciting cause is bacteria, which gain access by aspiration of foreign substances and through the blood and lymph channels. Infected emboli may carry the bacteria or the latter may gain access through the blood and lymph vessels without the aid of the former. The bacteria which are found to be the cause of post-operative pneumonia are the micrococcus lanceolatus, the pyogenetic cocci, the bacillus coli communis, the bacillus pneumoniae of Friedländer, and others.

In our cases age and season of the year did not seem to play important parts in the causation of the disease. The nature of the operation seemed more important, most of the cases having followed serious laparotomies.

Symptoms.—In the cases of *lobar pneumonia* the symptoms, as a rule, appeared a short time after operation, some within 12 hours. The disease usually ran a typical course, beginning with a chill. There was a sudden rise of temperature to 104° F.—105° F.; rapid pulse; cough with the characteristic sputum; pain in the chest, dyspnea or hurried respirations, and the disease usually ended by crisis. The physical signs were usually unmistakable. The symptoms of *bronchopneumonia* were not so definite. In these cases the symptoms came on later and it was generally several days before a diagnosis could be made

with any degree of certainty. The temperature was not so high and was somewhat irregular in its nature, there was generally bronchitis, cough, frequently blood-stained sputum, and rather indefinite physical signs. The cases, as a rule, ended by lysis.

Treatment.—The prophylactic treatment will alone be considered. The two things of most importance are the proper administration of the anesthetic and guarding the patient against chilling. In most cases it is possible, by proper administration of the anesthetic, to prevent the collection and aspiration of mucus, vomitus, etc. She should be protected against loss of heat by a properly heated operating room and ward, the protection of the intestine by means of warm gauze, and having her body well protected, both during operation and afterwards. Some surgeons employ operating table which are heated, and claim by their use to have lessened their mortality. Rapidity in operating, proper skill and care in the administration of and the reduction to the smallest possible quantity the amount of the anesthetic are very important. In cases of strangulated hernia, and where the patient is very weak or has chronic disease of the bronchi and lungs, local anesthesia is indicated. In the more serious operations, especially with nervous, excitable women, general anesthesia is nearly always necessary. Where the stomach is full it is well to wash it out before operation. Cleansing the mouth, throat, etc., is probably of little value. The administration of a small hypodermic injection of morphine and atropine a short time before the operation tends to put the patient in a more quiet frame of mind and to lessen the amount of secretion from the mouth, etc. After operation the patient should be frequently turned in bed, the bandaging should not constrict the abdomen or chest, she should be encouraged to breathe deeply, and to cough up any material which had been taken into the lungs by aspiration.

Pulmonary Embolism. According to my statistics, pulmonary embolism was recognized only six times in between 7000–8000 gynecological operations of all kinds. As I will show when considering “pleurisy” the occurrence of small emboli is probably much more frequent than the figures given would indicate. The principal sources of pulmonary embolism followed gynecological operations are the ovarian and branches of the common iliac veins. There seems to be a special liability for pulmonary embolism to follow operations for uterine fibro-myomata, ovarian tumors, carcinoma uteri, large incarcerated hernias. Also a num-

ber of cases have been reported following operations upon the kidneys. The embolism generally takes place between the first and the fourth week after the formation of the thrombus, although it occurs, at times, within a few days after operation and occasionally later than the fourth week.

In a considerable proportion of the cases of pulmonary embolism the thrombi exist at the time of operation, and the embolus is set free either by manipulation at the operation or by removal of the pressure on the veins. In a case seen in Zweifel's Clinic the fatal pulmonary embolus coming from the femoral vein followed the drainage of an abscess in the right iliac region.

The symptoms of a pulmonary embolus depend upon the size of the vessel which is obstructed, the rapidity and completeness of the obstruction, the nature of the embolus, and the general condition of the heart, lungs, etc., of the patient. When the embolus is large and the pulmonary artery, its chief branches or it may be when one of them is plugged, death may be instantaneous or ensue in a few minutes. Usually the patient gives a sharp cry, sits up suddenly in bed, complains of great precordial distress, and gasps for breath. The auxiliary muscles of respiration stand out prominently, the cervical veins are distended, and the patient shows marked signs of collapse. The heart's action may be tumultuous or slower than normal. It is generally weak and irregular. The pulse varies greatly being, in some cases, slow, full and irregular, in others almost imperceptible at the wrist. There is pallor, followed by cyanosis. One, at times, sees convulsions and opisthotonos. The patient usually dies in a state of coma. The physical signs do not indicate the lesion, the full stridulous breath sounds being usually the only thing brought out on examination of the chest. When the embolus does not totally occlude the vessel or vessels the patient may live several hours and die as a result of a secondary thrombus. In such a case the same symptoms are seen, only they are not so pronounced as in the rapidly fatal cases. In one of our fatal cases the symptoms grew less marked for a few hours and an examination of the chest showed stridulous breathing and a tumultuous heart's action only. She died at the end of 12 hours. Cases have been reported where the patient lived several days after the occurrence of the embolism. When a small vessel is plugged there results usually a hemorrhagic infarction of a limited extent. The occurrence of the infarction is indicated by sharp pain in the chest, chilly sensations, dyspnea, and

pleurisy. Blood-stained sputum is frequently seen and profuse hemoptysis is occasionally present. Examination of the lungs may show changes but the diagnosis can not be made in most cases by means of it, as it is generally impossible to differentiate these cases from other affections of the lungs which follow operations. Even after grave symptoms have arisen in pulmonary embolism the patient may recover. If the embolus is infected, the effects and symptoms are those of bland emboli to which are superadded the specific effects of the bacteria with which they are infected, and abscesses, gangrene, etc., may supervene.

The diagnosis is based upon the sudden and characteristic symptoms and the existence of a recognized source of an embolus. In any case where pleurisy of limited extent or evidence of small areas of pulmonary inflammation are seen after operation, the probability of an embolic cause should always be considered.

The treatment is for the most part prophylactic. After the embolism has occurred, very little can be done. Hypodermic injections of camphor or brandy should be used to combat the collapse and if the cyanosis is marked oxygen should be administered. Unfortunately in most cases one suspects nothing until the patient suddenly dies of an embolus from one of the thrombosed pelvic veins. Following operations nurses should be trained not to rub the lower extremities of patients who complain of pain there, without instructions. In cases of post-operative pleurisy, or sudden sharp pain in the chest with rapid and irregular pulse the surgeon should think of embolism and take precautions to prevent any marked or sudden muscular exertion.

Pleurisy.—Acute pleurisy occurring after operation and independent of pneumonia and tuberculosis is less frequent than would appear at first sight. Most cases where there is severe pain in the chest accompanied with a pleuritic friction rub and without definite signs of pneumonia are diagnosed pleurisy. In the majority of these cases the pleurisy is secondary to some other process, as hemorrhagic infarct or a small spot of bronchopneumonia. The relation which exists between pleurisy and embolism is strikingly illustrated in our cases. In the 16 cases of so-called pleurisy which have been previously mentioned, in only one was there an effusion, and in more than one-half of them there was either evidence of a thrombus or signs of an embolus.

One case was so typical and shows so plainly the connection

between thrombosis, pulmonary embolism and the so-called post-operative pleurisy that I give it somewhat in detail.

CASE I.—*Hystero-Myomectomy*. Mrs. C.—Operation, May 11, 1895. No complications.

May 18th.—Sudden attack of sharp pain over a localized area in the left chest. This was increased by deep inspiration. Temperature 103° F., pulse 104, dry cough. Physical examination showed a pleuritic friction sound in region of pain, the other signs being indefinite. The pain decreased and the signs of pleurisy had disappeared by May 24th.

May 29th.—While using a bed pan she was suddenly seized with a fainting spell and complained of a feeling of oppression over the sternum.

The physical examination of the chest was negative. Pulse, 120, feeble. Her symptoms increased and in a few hours she was suffering from dyspnea, a heavy aching pain over the sternum, ringing in the ears and dark spots before the eyes, cold and clammy extremities. The pulse was 140 and the heart's action tumultuous. (Under a mistaken diagnosis of hemorrhage, an exploratory laparotomy was performed, but nothing was found to account for the symptoms.)

May 30th.—Patient better. Pain in chest continues. Pulse 120. Pain is complained of in left leg.

May 31st.—Well marked symptoms of phlebitis in left leg.

June 7th.—Phlebitis in right leg.

The patient eventually recovered. In this case there was probably a thrombus in one of the pelvic veins which extended to the iliac veins and finally caused the so-called phlebitis. The attack of supposed pleurisy was undoubtedly an infarct from a small embolus and the second attack a typical one of pulmonary embolus which probably partially plugged a larger vessel.

The following are some of the cases of pleurisy which also show the same relationship:

CASE II.—Phlebitis followed in 7 days by pleurisy.

CASE III.—Signs of pleurisy with a plebitis on the following day.

CASE IV.—Phlebitis followed in one month by pleurisy (localized).

CASE V.—Pleurisy on 10th day. Edema of legs on 16th and 17th day respectively.

CASE VI.—Phlebitis on 23d day and pleurisy on 28th day after operation.

CASE VII.—Pleurisy with signs of pulmonary embolism with sudden dyspnea, cyanosis, rapid pulse, cold extremities.

CASE VIII.—Pleurisy (?) developed 11 days after operation. This gradually cleared up and on 27th day, as she was leaving the hospital, she fell over and expired. No autopsy allowed, but the diagnosis was "pulmonary embolus."

A certain number of cases of pleurisy are tuberculous in origin, but the proportion of such cases after operation is smaller than in cases which enter the medical wards. Cases of pleurisy arise also which are not due to pneumonic areas in the lung but owing to the fact that nearly all recover it is difficult to estimate the correct proportion of the different varieties.

The symptoms and treatment will not be dwelt on here. In a few cases arising in our wards the diagnosis wavered between diaphragmatic pleurisy and gall stones.

Gangrene of the lungs is a rare post-operative complication and is generally the result of aspiration of the vomited material during anesthesia. It may occur from the same cause in very weak or unconscious patients. At times it results from emboli which arise from gangrenous wounds or from the infection of an infarct with the putrefactive bacteria. The symptoms vary considerably and will not be gone into here. The diagnosis is largely based upon the character of the expectoration which is intensely fetid and usually of a greenish color. The German writers apparently meet with it more often than is the case in America. From the statistics given before it seems not an unusual complication in some of their clinics while only one known case has arisen following 8,000 operations in our clinic.

Abscesses of the lungs are even less common than gangrene, except as an accompaniment of pyemia or an extension from some neighboring organ. The causes are the same as gangrene with the absence of the putrefactive bacteria. Hence it is most often found in cases of pyemia and not as the result of an aspiration pneumonia.

Edema of the lungs to a greater or less extent occurs in all forms of intense congestion and inflammation. General edema occurring after operation is stated to have for its causes the direct action of the anesthetic upon the lung and a depression or paralysis of the vasomotor center. Disease of the heart and kidneys is a predisposing cause. The pathology of this affection is not clear. Noble says that since using salt solution freely, and especially since elevating the foot of the bed with the

peritoneal cavity full of this solution that he has had six cases of pulmonary edema. While he does not claim that the edema is due to the posture and use of the saline he thinks the frequent occurrence of edema very suggestive. Overfilling the blood vessels, diluting the blood, and giving the patient a posture which tends to compress the lungs and embarrass the heart, would, theoretically, tend to cause an edematous condition of the lungs. The principle symptoms are dyspnea and cough. The physical signs are indefinite, there being usually defective resonance and large liquid râles over the bases.

In acute cases purgation and venesection are indicated. Cardiac stimulants should be freely used.

Pulmonary tuberculosis as a post-operative affection is not well worked up. The conditions of the lungs which favor its development are generally present after serious operations. Doubtless many cases have had surgical operations as their starting-point, but it would appear that in the more acute tuberculous process is a lighting up of a pre-existing lesion. The encapsulated or quiescent tuberculous nodule becomes the starting point of a more serious lesion. I have seen two cases of acute pulmonary tuberculosis following simply hernia operations. They both came to autopsy within six weeks after the operation.

It is often necessary to operate upon patients who are known to have chronic pulmonary tuberculosis. In these cases local anesthesia should always, where possible, be employed, and when necessary to use chloroform or ether the former is to be chosen.

Acute Bronchitis.—This is one of the most frequent affections of the air passages which follow anesthesia. It generally accompanies pneumonia, but appears also quite frequently as an independent affection. There were 18 cases among our patients which were quite independent of any signs of pneumonia, etc.

The *causes* are the immediate effects of the anesthetic, especially ether; the existence of chronic bronchitis; catching cold during or after operation; and the aspiration of mucus and vomitus during narcosis.

The *symptoms* and *treatment* are those of ordinary bronchitis. The prophylaxis is most important, special attention being given to prevent chilling of the body by a cold operating room or having the patient not sufficiently protected in moving her from the operating room to the ward. The coughing causes pain

in patients having an abdominal incision and the remedies which check the cough are contraindicated to a certain extent as the accumulation of the initiating substances are a frequent cause of bronchopneumonia. The violent coughing has in a few cases caused a separation of the edges of the incision.

1729 H. Street, N. W.

NON-OPERATIVE TREATMENT OF ECLAMPSIA.*

BY

CHAS. S. BACON, M.D.,

Chicago, Ill.

THE current theory held by many obstetricians that considers eclampsia due to an intoxication of the maternal organism by fetal or placental products, will, if established, furnish grounds for hope of the eventful discovery of a specific serum treatment for this disease. At present, however, until we decide to resort to operative methods of emptying the uterus, we must practically rely upon those methods of symptomatic and eliminant treatment that have proven themselves of clinical value.

One form of treatment that is in a sense specific should perhaps be mentioned in this connection, namely, the administration of thyroid extract. Nicholson, the originator of this treatment, bases it upon the theory that the thyroid and parathyroid glands have an important function in destroying the metabolic and other poisons, and that these glands, whose functions are usually increased in pregnancy, in certain cases suffer an impairment in function, and give rise to the eclamptogenic state. He finds that the administration of the thyroid extract has a remarkable effect in controlling the seizures. His clinical observations and those of others justify careful experimentation with the agent, but its effects, if as beneficial as hoped for, do not necessitate ranking it as a specific.

Omitting, therefore, all serious consideration of specific treatment, both thyroid extract and all antieclamptic sera, we may group all other forms of nonoperative treatment, that is, forms of treatment not designed to empty the uterus, under the two heads of eliminative and symptomatic, which includes antispasmodic and supporting. As eliminative treatment we may include

* Read before the Chicago Gynecological Society December 16, 1904.

all measures of securing catharsis, diuresis and diaphoresis, whether the agents be drugs, salt solution injections or venesection. Symptomatic treatment may include agents like morphine, chloral, chloroform and ether, which act to obtund the sensations; other agents like veratrum viride and lumbar puncture, which decrease the blood pressure, and oxygen inhalation, which supports the heart by aiding the respiration. The influence of diet must be considered, for it concerns both the work of the eliminating organs and other organs like the liver, having to do with metabolism, which are injured by the pathological processes of the disease. Rest and bodily activity also have an important bearing on the extension of the disease processes.

In the preconvulsive stage of the eclamptogenic condition attention to diet and the bodily activities with regulation of the elimination are practically our only means of controlling the disease and averting its climax. As soon as symptoms of the condition appear, the diet should be regulated both as to quality and composition. It seems to be well proven that the great majority of people eat too much. The recent observations of Chittenden show that all classes take more food of all kinds, proteids and hydrocarbons, than is necessary. This excess of food undoubtedly increases the work of the eliminating organs. Such excessive work may be of great importance in case of already injured organs that are called upon to care for the unusual products of a morbid metabolism. Hence the needs of the body should be carefully estimated and the food supply limited to exactly meet those needs. As a rule it will be found that all the food elements can be diminished.

The composition of the food ration will depend upon this estimation of the needs for the food elements. It must also omit any constituents that will injure the kidneys or other organs. This is the chief reason why meat extractives, whether in meat itself or in meat soups, should be excluded. The danger of an excess of inorganic salts must be kept in mind. Practically, I think that all experience confirms the value of a milk diet, either strict or modified. In mild cases of edema modification of the milk diet, allowing a restricted amount of vegetables, fruit and cereals with a prohibition of meat, fish or their soups, is quite safe. In more severe cases I have no doubt that a strict milk diet is safer.

Strict rest in bed for serious cases and restriction of bodily movements in those less threatening, is perhaps of equal im-

portance to a proper diet. First, rest or quiet avoids exposure and the danger from checking skin elimination. Next, it avoids great production of waste matter which must be eliminated. Finally, and probably of chief importance, the resting body maintains an equable circulation that is less likely to dislodge morphological products of the placenta. According to the fetal theory of the origin of eclampsia cells and masses from the epithelial covering of the villi, when dislodged into the maternal circulation, cause the changes which lead to the injuries of the organs and the poisoning of the organism. Just as in an infection, quiet tends to prevent the distribution of the infecting material, so here it acts to avoid the dissemination of products which are in a sense foreign or disturbing.

When we come to consider the subject of elimination, we have first to decide upon the advisability of using diuretics. *Apriori* it would seem wiser to give rest to a kidney that is already injured and inadequate instead of inciting it by irritants which are likely to increase its injuries. I believe that this principle of action based upon theoretical considerations, is justified by clinical experience. According to this rule we should exclude nearly all of the diuretics, for very few of them are free from the suspicion of irritating the renal tissue and so acting as nephritic poisons. Perhaps we might make an exception of the caffein group, which is not, however, very important in this connection. The rule will exclude specifically the metals, coal tar products, volatile oils, digitalis, aloin, urotropin, as well as most of the salts of the alkalies.

The recent theories concerning the action of sodium chloride and other similar salts in cases of nephritis and edema, which is causing a considerable change in the method of treating these diseased conditions, are, of course, of much interest to us because of their bearing on the treatment of eclampsia. During the last ten or twelve years the use of saline injections, either in the rectum or under the skin, has been favored as being one of the most efficient and harmless means of securing a rapid and thorough "washing out of the kidneys." If it be true according to the very recent theories originating with French clinicians, that the withdrawal of salt in cases of nephritic edema is as beneficial as claimed, this good result does not necessarily prove that salt is an irritant to the kidney and thus disturbs its functions, but it may be due simply to the absorption of effusions that cannot exist

in the absence of salt. Whatever may be the explanation of the clinical phenomena, however, the new teaching will necessarily make us very cautious about using salt solution for the prevention or treatment of eclampsia.

Water alone has sometimes been given in large quantities for its diuretic effect. No doubt it increases the amount of urine, but it is not at all certain that it will increase the solid urinary constituents in proportion to the increase in the water. An excessive ingestion of water is quite certainly liable to be harmful and should not be countenanced.

Water and salt solutions may be injected into the bowel not only for the purpose of introducing them into the system, but also to wash out the colon and thus free it from fecal matter and the poisons eliminated by and contained on the mucus membrane. For the latter purpose it is always very valuable. To secure a greater stimulation of intestinal peristalsis it is sometimes desirable to employ water at a higher temperature than that of the body. A temperature of 108 to 110 degrees can generally be borne by the patient, but the possibility that a hot injection may start the uterine contractions should not be overlooked.

For the choice of drugs which act as intestinal eliminants we are sufficiently supplied if we limit ourselves to calomel, saline cathartics and castor and croton oil. The more powerful irritating purgatives of the anthracene group, like senna, aloes, etc., and the resinous compounds found in jalap and colocynth are not desirable because of their irritating effects on the pelvic circulation, their liability to disturb the uterus, and also because they may irritate the kidney. Occasionally senna and cascara sagrada may be employed in combination with salines, but our chief reliance is upon the latter. They may be given either as mineral waters or in any form of solution that may prove least distasteful to the patient. At the beginning of treatment and at intervals of three to six days it is very frequently a good plan to give calomel. My own practice is to use the divided doses of $\frac{1}{4}$ of a grain every half hour for four to eight times. Given in this way it probably produces its best effect as a cathartic and is least likely to injure the kidneys. Occasionally a dose of castor oil may be added with advantage. Croton oil is only to be used in cases of convulsions, where, because of its ease of administration, it has the first place.

The possibility of an efficient removal of urea and other prod-

ucts of metabolism by means of the skin has been proven by the elaborate experiments of Hoelscher. Edema and its effects are, of course, relieved by means of sweats. Whether the hot air cabinet, the hot air bed apparatus or the hot wet pack is preferable, depends upon the condition of the patient. The technique of the sweat is very important and should be carefully supervised. In the least serious cases a hot tub bath given in a warm room may suffice. The sweat should be given daily, generally best in the forenoon.

Venesection may be classed among the eliminative measures, as it removes with the blood an amount of poison proportional to the amount of blood let and also helps, temporarily at least, in relieving the edema. It is a measure, however, that no one would use before the onset of convulsions. That it may be of value in controlling the attacks the clinical experience of older physicians seems to leave no room for doubt, but that it should be resorted to with very great care is equally proven by facts and theoretical considerations.

If a course of eliminative treatment as just outlined be carried out, it will generally relieve the symptoms of the eclamptogenic condition in a few days. A most careful study of the condition is necessary, and the patient should never pass from under observation until the end of pregnancy. If great improvement in all the symptoms occur, the treatment may be relaxed but never suspended entirely. If in spite of the treatment the symptoms continue or increase in severity, it becomes necessary to decide whether the termination of pregnancy may not give better chances to the mother and child.

When we come to deal with a patient who has already had convulsions, we have to decide whether operative measures shall be instituted or not. In the former case, if delay in the operation is necessary, some eliminative and antieclamptic treatment should be started at once. In case we decide not to operate we must institute and carry out carefully the line of treatment that combined experience has shown most promising. It is perhaps hardly necessary for me to discuss the indications for operative interference, as this subject belongs rather to my colleagues. In a sentence it may be said that in the decision one should take into consideration the condition of the patient, her apparent strength and especially the strength of her heart, the severity and number of the attacks, the condition of the child, the external

surroundings and the possibility of obtaining assistance and favorable conditions for the proposed operative measures. When a nonoperative course is decided on or when delay in operation is found necessary, we must proceed to use all our resources to control the disease and save the patient or patients.

The eliminative treatment will be along the lines already given for the management of the preconvulsive stage. We have now, however, to control the convulsions themselves and their effects. To stop or diminish the severity of the eclamptic seizures, we may use drugs to diminish the sensibilities of the reflex centers. The most important of these are morphine, chloral, chloroform and ether.

It seems to me that anesthetics have very little place here. They are necessary when an operation is done, but they should not be used to produce a long period of insensibility. They are dangerous when used for this purpose in a healthy person. An anesthesia of longer duration than two hours is always considered dangerous. In the eclamptic we have a degenerated heart as well as a toxic blood condition that make an anesthetic more dangerous than in an ordinary surgical anesthesia. I have little doubt that the somewhat prevalent teaching favoring a prolonged chloroform anesthesia, even lasting six to twelve hours, has been the cause of some deaths. If we could know the approach of a convulsion long enough before its appearance to enable us to bring the patient under the influence of an anesthetic, we might seek to prevent it by constant watchfulness and quick action. I am convinced, however, that there are no such warning signs of the appearance of a fit, and, therefore, temporary employment of an anesthetic for this purpose is useless.

We are thus restricted to morphine and chloral to prevent convulsions. I have no hesitation in favoring the former. It can be given hypodermically, in exact doses, the amount absorbed is known, its action is immediate, and it has no irritating effect on the kidney, and its effect on the circulation is beneficial. For all of these reasons it is superior to chloral and may, therefore, entirely replace it. Although it is not a sure cure, as G. Veit first thought, it no doubt is a very important agent for good. A good rule for administering is $\frac{1}{3}$ to $\frac{1}{2}$ grain when the patient is first seen, according to the number and severity of the previous attacks, and then $\frac{1}{6}$ to $\frac{1}{4}$ grain after each subsequent

attack until 1 grain to $1\frac{1}{2}$ grains are given. Danger of asphyxia is avoided by the use of oxygen.

Veratrum viride has been used very much in this country, theoretically because it relieves the high blood pressure which characterizes the disease and because of the favorable reports made by some observers. The reports of its effects differ much, however, and many careful obstetricians who have given it a trial have been convinced that it has little if any value and is dangerous. I have used it a few times, but always with doubtful or unsatisfactory results, and regard it as a dangerous heart poison which can well be discarded from our armamentarium.

Recently Helme, Kroenig, and others have employed lumbar puncture and withdrawal of some of the cerebrospinal fluid for the purpose of relieving the intracranial pressure which, like the blood pressure, is greatly increased in eclampsia and presumably an important factor in the causation of convulsions. The results in the cases reported are by no means convincing, and hardly give hope for future success along this line of treatment.

In addition to the drugs and other agents already mentioned, there remains one more that has been used to some extent for some time, but which is not yet in such general use as its value would warrant. I refer to oxygen inhalation. It is especially indicated during a fit when there is great danger of asphyxiation. It is also of value between fits because of the impeded respiration and the desirability of relieving the weakened heart. In case morphine is given in large doses, oxygen should be used to counteract the slowing of the respiration, and it should be administered constantly when an anesthetic is given. It is therefore one of the first things to be procured when taking charge of a case of eclampsia.

If an eclamptic patient is successfully delivered, either spontaneously or by operative measures, she may be still in a dangerous condition for hours or days. Further fits may occur which must be managed as already suggested. Even if they are lacking, the weakness of the heart and inaction of the kidneys may cause a fatal termination. The heart weakness may manifest itself first some days later. These conditions call for supporting and symptomatic eliminating treatment, in which, besides the agents already mentioned, strychnine and nitroglycerine may be valuable.

THE TECHNIQUE OF THE OPERATION OF VENTROSUSPENSION OF THE UTERUS.*

BY

HENRY D. BEYEA, M.D.,
Philadelphia, Pa.,

Associate Surgeon, Gynceean Hospital; Associate in Gynecology, University of Pennsylvania; Assistant Gynecologist, University Hospital.

It is the purpose of this paper to direct to your attention the question of the details of the technique of the operation of ventrosuspension of the uterus or suspensio uteri; the question as to the amount and character of tissue to be included in the suspension sutures which will carry out the principle effectually, cure the displacement, prevent its recurrence, and at the same time secure that character of ligamentary support which will not interfere with or produce complication in the course of a succeeding pregnancy or labor.

While the principle of this operation has been the subject of constant controversy in the literature and before medical bodies during recent years, there has been no direct consideration or study of its particular technique as being an influence in the production of the cause of its criticism, of its not infrequent condemnation.

The methods of performing this operation vary greatly, as will be shown by reference to textbooks on Gynecology, and but few operators it will be found perform the operation in a like manner. A review of the literature will well demonstrate the truth of this statement.

The principle of suturing the uterus to the anterior abdominal wall for the cure of retroversion and retroflexion was first conceived and carried out by Tait, in 1880 (*The Pathology and Treatment of Diseases of the Ovaries*, William Wood & Co., N. Y., p. 94). After removing the ovaries in a woman 32 years of age, Tait secured the uterus to the anterior abdominal wall by passing a suture through the fundus and tissues of the abdominal incision. This operation, performed in February, 1880, was again practiced in the case of another patient and under about the same conditions, in April of the same year. Koberle (*Handbuch der Frauenkrankheiten*. Stuttgart, 1885,) describes performing

* Read before the Section on Gynecology, College of Physicians of Philadelphia, October 20, 1904.

laparotomy for intestinal obstruction and at the same time, after removing healthy ovaries, he sutured the pedicle adnexa stump to one side of the abdominal incision to cure a retroversion.

These operations did not, however, attract attention, nor was the principle considered until the address of Olshausen "*Über Ventrale Operation bei Prolapsus und Retroversio Uteri*," delivered before the 59th annual meeting of the Gynecological Section of the Naturalists Society of Berlin, September, 1886, and the paper of Kelly, under the title of "*Hysterorrhaphy*," read before the Philadelphia Obstetrical Society, September, 1886. These two operators conceived the principle, independently at about the same time, the operation of Olshausen being the suture of the horn of the uterus at the attachment of the round ligament with two, in some cases, a number of sutures to the abdominal incision, and Kelly the suture of the tubo-ovarian pedicle, between the then employed two pedicle ligatures, near as possible to the uterus, to the anterior abdominal wall, the sutures passing deeply into the tissues. Sanger at about the same time, in 1886 and '87, had carried out a similar operation, first, in two, then in several other cases.

In all of these early cases the uterus was sutured forward after a bilateral salpingo-oophorectomy; they were fixations of the uterus, effectually, because the ovaries had been removed, gained their object without complication, and were satisfactory. Silver wire was strongly recommended by Olshausen as a suture material, and silkworm gut by Kelly.

Sometime after this Kelly advised the suture of the ovarian ligament alone to the anterior abdominal wall for the purpose of gaining a more normal anteflexed position of the uterus.

Olshausen and Kelly recommended the operation for the cure of prolapse and retroversion of the uterus, retroversion of the complicated type with many adhesions. Later the operation was carried out without removing the ovaries and tubes, here the technique consisting in the suturing of the round ligaments at or near the uterine attachment to the abdominal wall by means of two silk sutures deeply introduced into the tissues, a fixation being still always carried out.

In 1890, Bolt of New York, and Leopold of Dresden, advised and practiced hanging the uterus by sutures passed directly through the fundus uteri. Kelly was still suturing the ovarian ligament to the abdominal wall. The operation of Bolt and

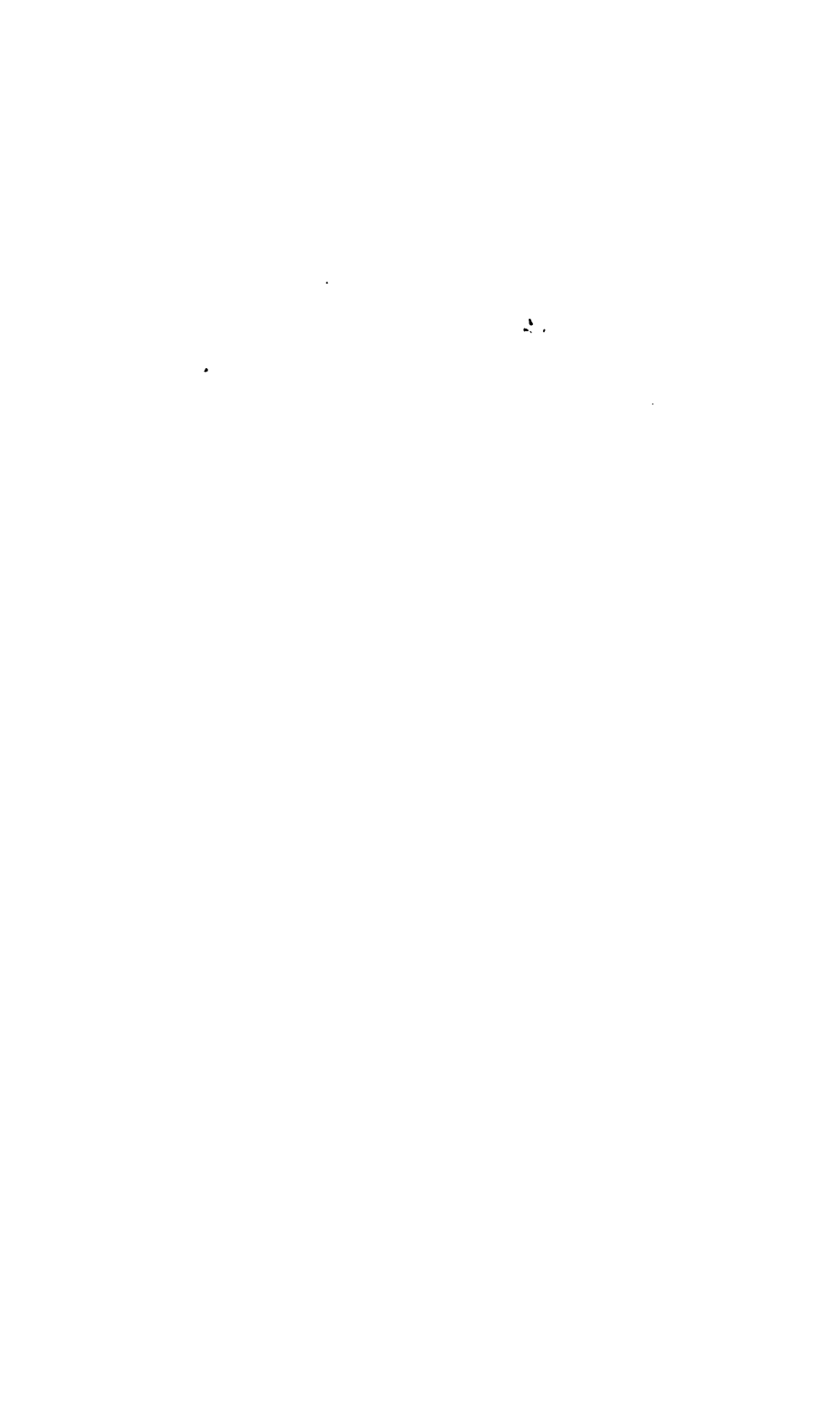
Leopold was designated as ventrofixation of the uterus, for an extensive amount of tissue was included in the sutures, and the uterus secured firmly, permanently to the anterior abdominal wall.

Kelly, at the 49th annual meeting of the American Medical Association, May 7, 1895, reported his first 170 cases of his, as now described, operation of suspensio uteri, and severely condemned the operation named ventrofixation, or hysterorrhaphy.

Immediately preceding this time, or from about the year 1891 and up to the present time, two distinct classes of operation have been performed under the names ventrosuspension, ventrofixation, hysterorrhaphy, and hysteropexy. I shall not consider the derivation of these names, nor need I point out to you the fact that in many instances they mean one and the same operation. Yet it is true that under these names are practiced two distinctly separable operative procedures, the one which should be properly called ventrofixation, and the other ventrosuspension of the uterus.

The operation of ventrofixation permanently fixes the uterus to the anterior abdominal wall or secures a wide surface of attachment between the uterus and abdominal wall, and completely or almost completely immobilizes the organ. This operation from my personal observation and from a consultation of textbooks, I would say, is widely practiced to-day. In a recent textbook, for instance, I note the writer recommends the use of buried silkworm gut or silver wire as a suture material, the sutures involving a wide area of tissue surface of the uterus and peritoneum. Another textbook recommends passing the sutures through the tissues of the entire abdominal wall and scarifying the uterine surface over the position of suture to secure a firm fixation.

Ventrosuspension, the other operative procedure, is represented in technique of the operation described by Kelly under the name, suspensio uteri. In the Kelly operation a small area of uterine parenchyma and peritoneum of the abdominal wall are included in two fine silk sutures, the uterus being suspended to the abdominal wall, first, directly, and then through the development of a thin fold of connective tissue one or two inches in length. I would point out that this operation is a suspension of the uterus, carries out the proper principle, and the other, a fixation of the uterus. The latter, ventrofixation, I believe is the operation which is accountable for all of the criticism to which this class of operative cure of retrodisplacement of the uterus has been sub-



jected to, namely, that it complicates, often seriously, gestation and labor.

The suspensio uteri of Kelly, in which operation there is included in the sutures a small area of the peritoneum of the abdominal wall, and a small-like area of uterine muscle, is highly satisfactory, in that it cures the retrodisplacement in the majority of cases, and in no way interferes with the process of pregnancy and labor. Its point of criticism and dissatisfaction lies in the fact that it has too frequently been followed by a recurrence of the displacement. For this reason many operators have felt driven to discard it and have adopted a round ligament operation. If this point of failure were corrected it must be recognized that the operation would be the most satisfactory practice for the surgical cure of uterine retrodisplacement.

It is to the correction of this point of failure that I wish particularly to direct your attention, and describe a method of technique, now practiced for eleven years and upon 465 women, by the writer, his associates and assistants, which we believe shows demonstrated almost complete absence of the point of failure in the Kelly operation.

The object of the operation of ventrosuspension is to secure the uteri to the anterior abdominal parietes, forward in an exaggerated normal position, so that in the succeeding weeks, through the mobility of the organ, its traction on the abdominal walls, with, for instance, distention of the bladder and changes in tension of the abdominal wall, a ligament is formed or pulled out to maintain the uterus in its normal position. To maintain it in normal position until the pathological changes incident to the retrodisplacement disappear and the normal conditions of uterine support are restored, again become active. This ligament must be of just sufficient strength to maintain the uterus forward, as it were, as a guy-rope, must not be attached or involve a wide surface of the uterine parenchyma, and the tissue forming the ligament must be of such a character as to undergo hypertrophy and hyperplasia, or stretching, during the growth of the uterus during gestation. If these conditions are secured, then the complications of gestation and labor, which have been attributed to ventrofixation and ventrosuspension, will not and cannot occur.

Of equal importance, the suspension ligament must be of sufficient strength, the primary attachment to the abdominal parietes also of sufficient strength, to secure against its rupture, and the

recurrence of the malposition of the organ from the time of operation.

In the operation of Kelly, as suggested, the point of fault is resident in the fact that the ligamentary support is not of sufficient strength and recurrences too frequently take place. During the period of eleven years, Dr. Penrose, myself, and the others indicated, we believe, have corrected this fault by including in the suspension silk sutures, one each side of the incision a few fibers of the rectus muscle, a portion of muscle fiber about one-fourth of an inch in diameter. With this muscle fiber, of course, the peritoneum and the amount of uterine tissue described by Kelly. Further, the sutures are not introduced from, and in and out through the inner surface of the peritoneum, but are two sutures introduced from right to left through the structures mentioned and tied with just sufficient tension to bring the uterus firmly in contact with the parietal peritoneum, and yet not cut through the muscle tissue. Another comparative factor in the operation is that, instead of the uterus being simply brought in contact with the parietal peritoneum, leaving a space between the peritoneum and rectus muscle, the uterus in contact with the parietal peritoneum is brought firmly against the rectus muscle.

The technique of the operation is shown in the accompanying illustration, Fig. 1. The ligamentary support formed through this operation is always single, a single band of tissue, and as determined by comparison, is stronger and thicker than in the Kelly operation. The sutures include the muscle tissue of the uterus and that of the abdominal wall, and we believe, therefore, the ligament contains these same tissues to a greater or less extent, which is an advantage in its hypertrophy and hyperplasia during pregnancy, and its contractile property during the puerperium.

I have recently received written communications from 272 of the women operated upon. Of the 272 women, 153 are now, at the time of study, married, this number including such as have had operations upon the tubes which did or might have rendered them sterile. Of the 153 married women, 41 have been pregnant since operation, 37 having gone to term and borne a living child. Five have twice borne a child. Two have given birth to twins, one twice. One woman died of eclampsia following a normal labor. In four, instruments were employed at birth, once for posterior rotation of the occiput. In one there was an unusual, but not sufficient to be termed postpartum, hemorrhage. In two, labor

was long and difficult, both primipara. one lasting three days. In one there was hemorrhage during pregnancy, the cause of which was not determined. In none of the 42 labors, as described by the patient and attending physician, was there complication which

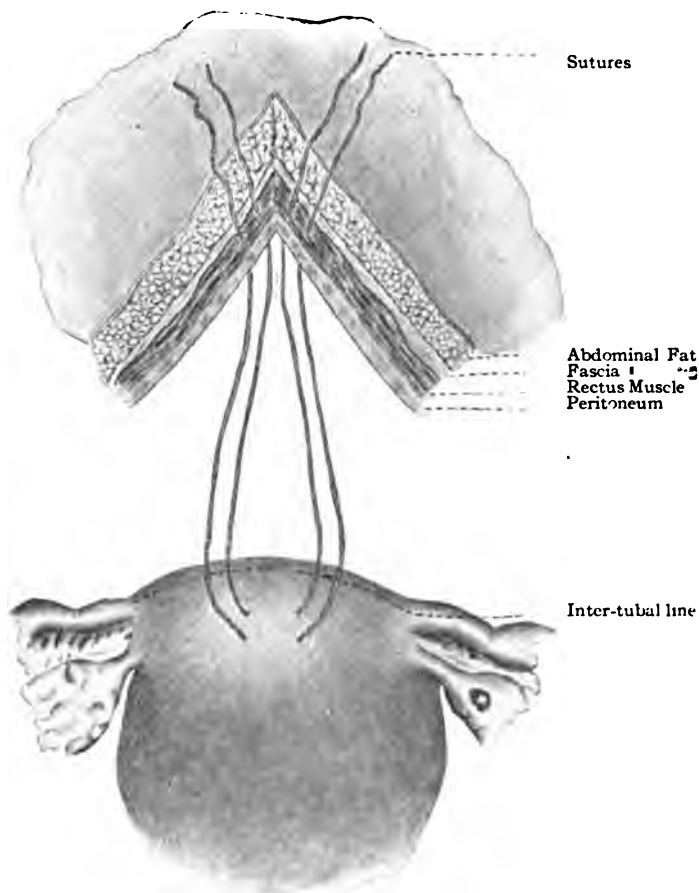


Fig. 1. Showing tissues included in sutures in Ventrosuspension. □

could be attributed to the operation. It was thought possible that the operation was the cause of the hemorrhage following labor in the one case, but there was no proof. As to the other complications, the use of forceps and long labors, they are complications which are not infrequent where no operative procedure has been performed upon the uterus, and are not more than normally frequent here.

Nine of the 153 women have become pregnant since operation and aborted or miscarried, all before the sixth month. Nine abortions or miscarriages, considering those induced, for these cases represent all classes of women, are not more than the average percentage in 153 women.

There have been to my personal knowledge four instances among the 465 cases in which the retrodisplacement recurred after operation. In three this occurred before the patients left the

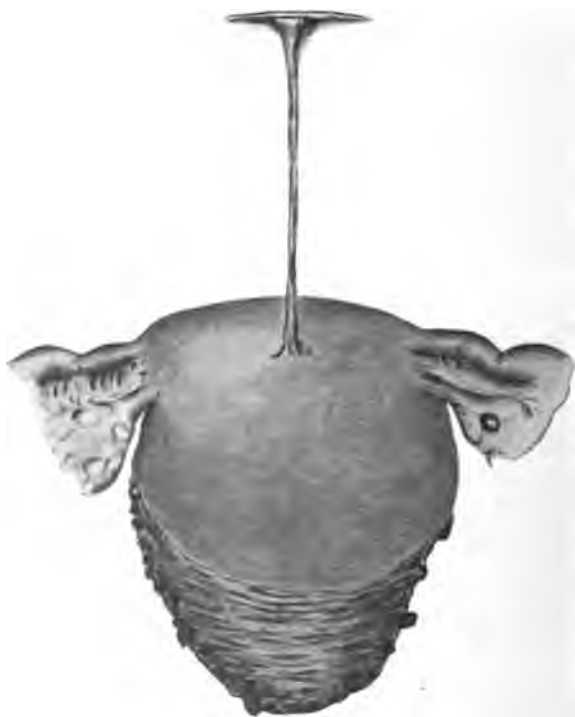


Fig. 2. The ligament suspending the uterus after one year.
(An actual case, the uterus being removed for other cause.)

hospital. In two as the result of pneumonia, the coughing causing such a strain on the abdominal walls as to sever the attachment. In the other, the attachment was separated by the resident physician in removing sutures from the cervix. In the fourth case, the woman, regardless of my advice, took up her duties as a housewife immediately on returning to her home, did heavy lifting, lifted a child eighteen months of age several times each day, and the retrodisplacement occurred. There have probably been

other recurrences, but I have no proof that such do exist. I would point out that all of the recurrences were due to an active and wholly sufficient cause.

This experience warrants the belief that the operation of ventrosuspension, performed as herein stated and advised, with the inclusion in the sutures of a small amount of the tissue of the rectus muscle with the peritoneum, cures retrodisplacement of the uterus, never complicates gestation and labor, and is but extremely rarely followed by a return of the condition. Its results are fully as satisfactory as those of any operation in surgery.

1411 SPRUCE STREET, PHILADELPHIA.

THE RESULTS OF VENTRAL SUSPENSION OF THE UTERUS AT THE JOHNS HOPKINS HOSPITAL.

BY

GERRY R. HOLDEN, M.D.,

Resident Gynecologist, The Johns Hopkins Hospital; Assistant in Gynecology, Johns Hopkins University.

FROM April 1, 1892, to June 1, 1903, the uterus has been suspended to the anterior abdominal wall over 900 times at the Johns Hopkins Hospital. In 445 of these cases I have been able to obtain a more or less complete post-operative history. These reports have been obtained from letters from patients to various members of the gynecological staff of this hospital, from subsequent histories taken from some patients who were re-admitted later for other troubles, and from personal interviews with patients by various members of the staff.

The varying intervals which elapsed between the operation and the subsequent report in these different cases are tabulated as follows:

4 to 12 months.....	5 cases
1 to 2 years.....	86 cases
2 to 3 years.....	109 cases
3 to 4 years.....	89 cases
4 to 5 years.....	70 cases
5 to 6 years.....	44 cases
6 to 7 years.....	25 cases
7 to 8 years.....	12 cases
8 to 11 years.....	5 cases

In 184 cases suspension alone, or suspension preceded by dilatation and curettage, was done. In 154 cases plastic operations

on the perineum were also done in addition to the suspension. In 46 cases pelvic inflammatory disease was present to such an extent that, in addition to the suspension, portions of the adnexa were removed. In 61 cases suspension was associated with miscellaneous operations, viz., kidney operations, appendectomies, myomectomies, etc.

I.—SYMPTOMATIC RESULTS.

In considering the results obtained in the relief of the subjective symptoms, I have included only those cases in which the reposition was the sole or a prominent factor. In no case was the period from operation to report less than one year.

According to the relief obtained I have divided the results in three classes: Class I, Successful Cases. Many of these patients were entirely relieved of all the symptoms of which they complained before the operation; others, while not entirely relieved, suffered but little, and considered that their condition was very much better than before the operation. Class II, Partial relief, not very great. Class III, No relief.

SUSPENSION ALONE.—182 cases. 128 nulliparæ, with no relaxation of the vaginal outlet; 54 multiparæ, the majority with no relaxation of the outlet. A small number of the early cases, however, did have relaxations which were not repaired. In 34 cases the uterus was slightly adherent, but these adhesions were easily broken up, and no further operation for the inflammatory condition was done.

	Class I. Cure or very great relief.	Class II. Partial relief.	Class III. No relief.
No adhesions present.....	86	28	34
Adhesions present.....	23	5	6
	109	33	40

One hundred and nine cases, therefore, out of 182, or 60 per cent. were successful; 40, or 21 per cent., had no relief.

SUSPENSIONS WITH PLASTIC OPERATIONS ON THE OUTLET.—154 cases. 12 cases with light adhesions which were broken up, no further operative interference necessary.

	Class I. Cure or very great relief.	Class II. Partial relief.	Class III. No relief.
Without adhesions.....	93	18	31
With adhesions.....	9	1	2
	102	19	33

Out of the 154 cases, 102, or 66 per cent., were successful; 33, or 21 per cent., had no relief.

Retroposition in multiparæ usually is caused by factors incident to labor, and is often associated with relaxation of the outlet. It is interesting to compare the results obtained in these 154 multiparæ with relaxed vaginal outlets and retrodisplacements with the results in the nulliparæ included in the 184 cases in which suspension alone was done. There were 128 nulliparæ. Seventy-nine cases, 61 per cent. of the 128, were successful.

The prognosis in nulliparæ, after suspension of the uterus, is not so favorable as in multiparæ with retroposition associated with relaxation of the outlet, provided that the relaxed outlet be repaired in addition to the suspension.

These cases were in no way selected. In many of them, classified as not relieved, the symptoms of which they now complain are apparently hysterical or neurasthenic in nature, and not those usually recognized as directly caused by retroposition. On the other hand, many cases markedly neurasthenic at the time of operation have apparently entirely recovered from all symptoms since the operation. In carefully selected cases the percentage of successful operations would undoubtedly be higher. By so selecting cases, however, one would refuse to operate upon a certain number of women who would have been benefited if the operation had been performed.

EFFECT OF SUSPENSION ON DYSMENORRHEA.—In many cases retroposition apparently causes dysmenorrhea. In the histories of 120 nulliparæ a good description of menstruation is given. 109, or 90 per cent. of these 120 patients, suffered from dysmenorrhea before operation. In 97 cases a definite statement is made in each report as to the character of menstruation after the operation. 51 of these 97 patients, or 52 per cent., were absolutely or very greatly relieved; 33 of them, or 34 per cent., had no relief. The operation in each case was suspension of the uterus, with or without dilatation of the cervix and curettage of the endometrium.

In 202 multiparæ dysmenorrhea occurred in 113 cases, or 55 per cent. In estimating the effect of the operation I have included only those cases in which the outlet was also repaired, as in some of the early cases in multiparæ relaxations of the outlet were present but not repaired. In 70 cases of multiparæ who had suspensions and repairs of the outlet, a definite statement is made

as to dysmenorrhea after operation. Forty-three, or 61 per cent., were absolutely or very greatly relieved; 22, or 31 per cent., had no relief.

Suspension, therefore, relieves dysmenorrhea in from 50 to 60 per cent. of the cases. The prognosis is better in the displacements occurring after childbirth, providing that accompanying relaxations be also repaired.

II.—ANATOMICAL RESULTS.

In 69 of these 445 cases examinations have been made at periods varying from four months to nine years after the operation. The various periods are as follows:

4 to 6 months.....	5 cases
6 to 12 months.....	11 cases
1 to 2 years.....	14 cases
2 to 3 years.....	15 cases
3 to 4 years.....	8 cases
4 to 5 years.....	4 cases
5 to 6 years.....	6 cases
6 to 7 years.....	2 cases
7 to 8 years.....	3 cases
8 to 10 years.....	1 case

RECURRENCE.—In 8 of these 69 cases the uterus was again in retroposition. Five of these 8 recurrences occurred after pregnancies. If we eliminate the effect of pregnancy by deducting these 5 cases, the recurrences are but 3 out of 64, 95 per cent. without recurrence.

In 59 cases the uterus was movable, but could not be thrown into retroposition. In two cases it was fixed to the anterior abdominal wall. The records of these two cases are as follows:

Gyn. No. 8145. Operation in September, 1900, repair of relaxed vaginal outlet and suspension of the uterus. No adhesions present at the time of operation. Six months later the fundus fixed to the anterior abdominal wall. Possibly an examination after more time had elapsed would have shown the formation of a ligament.

Gyn. No. 3581. Operation in July, 1895, repair of relaxed vaginal outlet and suspension of the uterus. No description of operation given in history. Seven years later a second operation was done. The uterus was found fixed to the anterior abdominal wall. At the time of the first operation the technique of suspension was not so fully developed as it has since become. Possibly the uterus was suspended to the anterior abdominal wall while bleeding from the puncture wounds which were made by seizing it with the bullet forceps. At present that is avoided.

In considering these results it is pertinent to mention that many of the patients upon whom these subsequent examinations were made returned to the hospital complaining of various symptoms which they attributed to pelvic trouble; in short, the very patients in whom we would expect to find recurrences if recurrences were frequent. That retropositions were present in so small a number apparently indicates that the percentage of recurrences in the entire number is much less.

THE SUSPENSORY LIGAMENT.—In 19 cases a second laparotomy was performed later at this hospital, and notes made as to the character of the suspensory ligament which had been formed as the result of the previous suspension operation. These results are tabulated as follows:

Gyn. No.	Length of ligament	Period between the two operations	Number of ligaments	Diameter of ligament	Position of uterus
9069	2 cm.	2 7-12 years	single	?	ante-position
6993	2 cm.	3		5 mm.	"
6137	2 cm.	10-12 "	single band	1.5 cm. wide	"
3673	3 cm.	1 6-12 "	three slender cords	?	"
7504	3 1-2 cm.	2 "	single band	2 cm. wide	"
8763	3 1-2 cm.	2 "	single	?	"
6673	5 cm.	1 3-12 "	"	3 mm.	"
8532	5 cm.	1 8-12 "	"	6 mm.	"
6654	5 cm.	2 8-12 "	"	5 mm.	"
8402	5 cm.	3 5-12 "	"	?	"
8776	5 cm.	1 year	two slender cords	?	"
3402	6 cm.	1 "	two slender cords	2 mm.	"
7781	7 cm.	2 7-12 years	single	5 mm.	"
8290	8 cm.	3 7-12 "	"	4 mm.	"
5983	8 cm.	11-12 "	"	?	retroposition
7241	18 cm.	2 6-12 "	"	?	"
8482	?	3 "	two slender cords	?	ante-position
3093	?	2 7-12 "	single	?	"
5211	?	7-12 "	two slender cords	?	"

Two points are made evident by study of this table. The length of the ligament does not depend upon the time which has elapsed since the operation (for periods over one year), nor upon the diameter or breadth of the ligament.

In other words, as time goes on, the uterus does not exert a uniform, constant, downward pull upon the adhesion between it and the abdominal wall. If such a force were continually present we should expect to find in a given case that the length of the ligament would vary directly with the length of time which had elapsed since the suspension operation was performed; the longer the uterus had been suspended the greater would be the length of the ligament. There is no such relationship demonstrable, however.

The length of the ligament is determined in each case by the extent to which the uterus must sink into the pelvis in order to

come into a state of equilibrium. When first suspended, the normal attachments of the uterus are put upon a stretch. This tension is transmitted upward through the body of the uterus and exerts a downward pull upon the artificial attachment of the fundus to the abdominal wall. A ligamentous adhesion is drawn out from the two peritoneal surfaces. As this ligament is drawn out longer and longer the uterus sinks lower into the pelvis, and the tension upon the normal uterine attachments grows less and finally ceases. Then the uterus lies in a position of mobile equilibrium. There is no more pull upon the ligament, and hence it is not drawn out to a greater length. The effect of the ligament now is to keep the fundus of the uterus forward so that the intra-abdominal pressure is exerted upon the posterior surface of the uterus, and the uterus lies in mobile anteposition.

The ligament formed is one or two cords or a band, averaging 3 to 5 cm. long and a few mm. in diameter.

III.—LABOR AFTER SUSPENSION.

In 238 of these cases we might expect pregnancies; that is, the patients were in the child-bearing period, were not sterilized by operation, and were married. One hundred and forty-five reported that they had not borne children since operation, 23 made no report on this subject, while 69 had borne children since operation. The number of labors in these 69 women was 83.

Sixty-six of these 83 labors were reported as being entirely normal during pregnancy and labor. In the others the abnormalities were: Severe nausea and vomiting, 1 case; puerperium and labor normal, died of puerperal septicemia, 1; retained placenta, 1; phlebitis, 1; child still-born, 3. One patient reports that she "had much trouble when child was born," but does not state the nature. The operation was suspension with repair of the outlet (Gyn. No. 7235). Forceps were used in 5 cases. In 2 of them we can exclude any dystocia arising from the suspension. These 2 cases are as follows:

Gyn. No. 7424. Operation, suspension and repair of relaxed vaginal outlet. Labor 21 months later. Forceps used. Had four children before operation, with forceps in each case.

Gyn. No. 8431. Operation, suspension, repair of relaxed vaginal outlet, and amputation of the cervix. Labor 13 months later in the Johns Hopkins Hospital. Obst. No. 1066. Low forceps, due to uterine inertia; long second stage. There was no

pain during pregnancy, uterus was in mobile ante-position when discharged from the hospital.

In the other 3 cases we have no history, except that forceps were used.

Five patients complained of abdominal pain during pregnancy. Four of them were delivered normally; forceps used in one case. Their histories are as follows:

Gyn. No. 9099. Operation, suspension with dilatation and curettage. Labor two years later; pain "during pregnancy"; forceps used. No examination later.

Gyn. No. 3581. This case is noted above as one in which a fixation resulted. Labor $3\frac{1}{2}$ years after operation. Abdominal pain from second month of pregnancy on.

Gyn. No. 4817. Operation, plastic on perineum and suspension, in November, 1896. Some suppuration in abdominal wound. Fundus big and soft at time of operation. Labor 2 years and 5 months later. Pain "during pregnancy." No examination after labor. A fixation may have resulted here from the fact that the aseptic healing of the incision was not perfect.

Gyn. No. 1701. Suspension, with plastic on the perineum, in November, 1892. First labor 15 months later; no pain. Became pregnant again. Date of second confinement not given, but states that she had abdominal pain during pregnancy. Labor was normal. This pain can hardly be considered due to the suspension, as the first pregnancy was without pain.

Gyn. No. 7835. Operation, suspension with plastic on the perineum, in May, 1900. Complained of abdominal pain during pregnancy. No examination after labor.

The only symptoms in these cases which might possibly be due to the suspension are as follows: Abdominal pain (alone), 3 cases; abdominal pain and the use of forceps, 1 case; forceps alone (no pain during pregnancy), 2 cases; indefinite, 1 case. Seven cases, therefore, or 8 per cent., had adverse symptoms during pregnancy or labor which might be due to the results of the operation.

RECURRENCE OF RETROPOSITION AFTER PREGNANCY.—Fourteen cases have been examined after labor; 2 cases two weeks after; the others at periods varying from three months to six years. In 5 of them the retroposition had recurred.

While the small number of cases will not warrant any general

conclusions, we at least can say that by no means does pregnancy necessarily cause a recurrence of the retroposition.

IV.—RESULTS IN PELVIC INFLAMMATORY CASES.

In 46 cases of pelvic inflammatory disease associated with retroposition of the uterus, various portions of the adnexa were removed, in addition to the suspension of the uterus. From the complicated nature of these cases no conclusions regarding the symptomatic results of suspension itself should be drawn, yet considered as the results of conservative surgery in pelvic inflammatory disease, they are interesting. Of the 46 cases, 35 were entirely cured or very greatly relieved, 76 per cent. But 2 of the 46 cases required a second operation for pelvic inflammatory disease. Twenty-nine patients were married, in the child-bearing period, and were not sterilized by the operation. Three of these 29 patients had children after the operation. The right tube and ovary had been removed in 2 cases, the left ovary in 1 case.

In these cases at least, conservative surgery was very successful.

CONCLUSIONS.

In these 445 cases in which the post-operative history is known, I would draw the following conclusions:

1. Successful symptomatic results after the suspension of the uterus to the anterior abdominal wall may be expected in about 60 per cent. of all those cases in which the retroposition is the sole or most prominent abnormal condition. The prognosis is somewhat better in retroposition associated with relaxed vaginal outlet, provided the outlet also be repaired, than it is in retroposition alone.

2. The great majority of nulliparæ who have symptoms caused by retroposition of the uterus suffer from dysmenorrhea (90%). Multiparæ with retroposition suffer from dysmenorrhea much less frequently (55%). 50 per cent. to 60 per cent. of all those cases of dysmenorrhea in which retroposition of the uterus is the sole or most prominent abnormal condition are relieved of the dysmenorrhea by suspension of the uterus. The prognosis is better in multiparæ with relaxed vaginal outlets (provided that, in addition to suspending the uterus, the outlet also be repaired) than in nulliparæ.

4. The suspensory ligament is usually a band or one or two cords. The length averages 3-5 cm. After one year the length

of the ligament does not depend on the time elapsing since the operation or the thickness of the ligament.

5. The great majority of patients who have had the suspension operation performed have no adverse symptoms referable to the suspension during pregnancy or labor. The most frequent adverse symptom which can be referred to the operation is abdominal pain during pregnancy.

6. Recurrence of the retroposition may occur after labor, but does not necessarily follow. If labor does not intervene the percentage of recurrences is not more than 5 per cent. If examinations could have been made upon all the 445 patients of this series, the percentage of recurrence would probably be less than 5 per cent.

CESAREAN SECTION FOLLOWING VENTRAL FIXATION.

BY

MARY ALMIRA SMITH, A.M., M.D.,

Boston, Mass.

IN 1886 Dr. Howard Kelly first called the attention of the profession to a new operation for the cure of retrodeviations of the uterus, by the formation of an artificial ligament, or ligaments, between the uterus and abdominal wall, which should permanently hold the fundus forward in an anterior position.

A full description of this operation, with its modifications, is given in his *Operative Gynecology*, Vol. II, p. 149.

Like many new operations, ventral fixation or suspension found great favor with surgeons at home and abroad, Olshausen being the first to publish a paper on the subject. During the last ten years medical literature has abounded with reports of cases, mostly in favor of the procedure.

In August 1896, Dr. C. P. Noble of Philadelphia published in the *AMER. JOUR. OF OBSTETRICS* a critical review of the subject, with tables of all the cases reported to that time, and in May, 1904, Dr. F. W. Lynch of Baltimore recorded in the *Bulletin* of the Johns Hopkins Hospital the bibliography to that date, so that no repetition is now needed.

From a gynecological viewpoint, the operation presents certain advantages, particularly in those cases where other means for

correcting the retroversion have failed, or where some other diseased condition of the uterus or its appendages may make it desirable to open the abdominal cavity.

From the obstetrical side, however, there seems to be valid reason to doubt the desirability of this operation upon women during the child-bearing period.

Many cases have been reported of serious symptoms occurring during pregnancy, such as pain from dragging on the scar, intractable vomiting, dysuria, etc., while at childbirth severe dystocia, requiring operative interference, is very frequent. The anterior wall of the uterus, not being able to expand and rise into the abdominal cavity, may constitute a veritable tumor, blocking the pelvic inlet. The entire expansion of the growing uterus must be at the expense of the lateral and posterior walls of the same, which become very thin and liable to rupture. The cervix is gradually drawn up into the hollow of the sacrum, or above the sacral promontory, and during labor does not dilate as it should, even when the pains are severe, while its abnormal position renders manual dilatation difficult, if not impossible. The abnormal development of the uterus leads also to malpositions of the child; transverse and breech presentations being common. Often much precious time is lost, or infection of the patient occurs in ineffectual efforts at delivery through the vagina by means of high forceps or version.

In the end relief must be sought through either vaginal or abdominal Cesarean section, and of these, the latter would seem to be most frequently indicated. At present its mortality is high, but this will no doubt improve as the operation comes to be undertaken at the beginning of labor, before the patient becomes exhausted.

The case in hand is briefly as follows: E. M., age 23, native of Nova Scotia. Nothing of importance in the family or personal history before puberty. Menses were established at fifteen years of age, always painful and irregular. Her physician curetted the uterus in 1902, but the dysmenorrhea and retroversion were not relieved until he did a ventral fixation, in May, 1903. Pregnancy followed in November of the same year. Except for some pain and nausea, she was fairly well during this time.

About August 1 patient entered the New England Hospital for Women and Children, in the service of Dr. Emma L. Call, showing some symptoms of labor. At this time some effort was

made to perform external version, which, however, proved ineffectual, and the pains having subsided, the patient returned home. On August 12 the pains returned, and the waters broke just prior to her re-entrance into the hospital. The pains were soon very severe and almost continuous, without, however, accomplishing much in the way of dilating the cervix, which was so high up in the sacrum that it could hardly be reached by the examining finger.

The child was in the transverse position, with head to the right. The uterus was so immovable, owing to the previous operation of ventral fixation, that the fundus could not be raised or the cervix drawn down, and as rupture of the uterus seemed imminent, it was decided to perform Cesarean section at once. The patient was etherized and the abdomen hastily prepared for operation. On opening the abdominal cavity the uterus was found bound down in front in its lower segment and partially twisted on its axis.

It was drawn up into the abdominal wound and an incision made into what appeared to be the fundus and anterior wall. Hemorrhage was easily controlled by pressure on the cervix made by an assistant. The uterine wall was very thin, in one place almost transparent. The membranes were quickly ruptured and the child extracted and cared for by an assistant. The placenta was firmly adherent and had to be forcibly detached. The uterine cavity was now cleansed by warm normal salt solution, which also helped to excite good uterine contraction. Drainage was secured by iodoform gauze passed through the cervix. The uterine wound was united by two rows of silk sutures, which entirely controlled the bleeding.

Attention was now turned to the constricting band, which had caused all the trouble. This was about ten c. m. long, three wide, and one thick. It was firmly attached to both abdominal wall and uterus, rendering the latter almost immovable, and when dissected off the uterus sprang back into its rightful position as though it had been released from a stretched elastic band. It was now seen that the entire expansion of the organ had been at the expense of the posterior and lateral walls, and that the uterine incision was entirely in the posterior wall. The uterine stump of the band was also posterior, about two c. m. below the fundus. The remainder of the band was attached to the whole length of the old scar in the abdominal wall, showing that what-

ever operation had been intended, a radical ventrofixation was the result.

The abdominal incision was now closed with silkworm gut sutures and patient returned to her bed in good condition. Convalescence was uneventful, and mother and child were discharged well on the thirtieth day.

The following conclusions may be drawn from this and similar cases previously reported:

1. That ventral fixation is contraindicated during the child-bearing period.

2. If ventral suspension is undertaken, care must be exercised that it does not unwittingly become a fixation.

3. That Alexander's operation, or some one of the many varieties of intraabdominal shortening of the ligaments, are more suitable operations for women at this period.

4. That in severe cases of dystocia from this cause, immediate Cesarean section is preferable to prolonged attempts at vaginal delivery.

5. To prevent a recurrence of the trouble, the offending band should be removed.

33 NEWBURY STREET.

UNCOMPLICATED VARICOSE VEINS OF THE FEMALE PELVIS.*

BY

S. M. MILLER, M.D.,

Peoria, Illinois.

and

ALLEN B. KANAVAL, M.D.,

Chicago, Illinois.

THE study of varicose veins of the broad ligament was undertaken for the purpose of discussing the following propositions:

First. Are there cases of this disease uncomplicated by any appreciable pathological condition which give rise to a distinct syndrome demanding interference?

Second. May uncomplicated varicose veins of the broad ligament produce symptoms that may be attributed erroneously to other conditions and hence lead us to operate under mistaken diagnoses?

*Read before the Chicago Gynecological Society, January 20, 1905.

Third. The possibility of rupture and severe hemorrhage.

Fourth. When varicose veins of the broad ligament are associated with other gross pelvic lesions, what relation do they bear to the symptoms and treatment of the condition?

Fifth. Have the reported cases borne out the original assumption of Dudley, that this condition is analogous to varicocele in the male?

Varicose veins of the broad ligament have not received the attention that the condition demands. They are passed over by the gynecologists with the assumption that they are secondary, and that upon correction of the causative lesion they will disappear. Again, they may be overlooked because they do not manifest themselves with the patient prone or in the Trendelenburg position. Thus many cases probably are accidentally and unwittingly cured by the ablation of the veins that accompanies the removal of the tube and ovary, in which case the recovery is, of course, attributed to the latter. Hence it is that it is not considered as a source of suffering.

Should not we rather ask ourselves can this condition itself cause trouble, and may it not demand attention, separate and distinct from other pathological lesions? Cruveilhier reported a very interesting case to the Anatomical Society of Paris in 1827. Reichet, in 1854, mentions the condition, while his pupil, Devalz, in 1858, made a rather extensive study of the pathology. Again, in 1877, Dwight reported a case. Winckel, in 1881, reported finding the condition ten times in 300 autopsies. The first cases in which the clinical history is detailed are those of Dudley, who also has the distinction of having first identified the lesion as a clinical and pathological entity, and of having deliberately devised and performed an operation for the relief of the varicosity. Many gynecologists, however, took exception to his assumption of a relation between these veins and varicocele in the male. Following Dudley's classic paper in 1888, Kelly, Malins, Hirst and Wilson reported cases. The subject then sank into comparative obscurity. Recently, however, it is given recognition by Zinke in Reed's Text Book of Gynecology.

Anatomy.—Because of Dudley's assumption that this condition is analogous to varicocele in the male, careful study of anatomy is essential. The veins of the broad ligament lie, for the most part, in two groups, under the ovary and low down in the broad ligament near the internal os. There is a very free anastomosis

between them, but these groups are so distinct that either may become enlarged. The ovarian group may be enlarged either above or below the ovary and to the separate varicosities. Winckel has given the names superior and inferior parovarian varicocele. There are a number of sinuses at the sides of the uterus which communicate with these veins and particularly during pregnancy grow very large, and they should be remembered as a possible atrium of infection and so have much to do with the production of varicose veins. Malins states that there are muscular bands and smooth muscle fibers in the walls of the veins which in contracting retard the return flow of blood.

Varicocele occurs in about ten per cent. of all individuals in the male. The anatomical peculiarities that predispose the spermatic vein to this affection are alike present in the case of the ovarian veins and pampiniform plexus. The great length and vertical course of the ovarian vein, the unsupported column of blood in the plexus, their tortuosity in the broad ligament, their many anastomoses, notably with the uterine vein, are factors of importance. The entrance of the left ovarian vein at right angles into the left renal vein and the possibility of pressure upon it by a loaded sigmoid flexure would seem to predispose the veins of the left broad ligament to this affection. A prolapse of the left kidney with kinking of the veins might produce distention of the left ovarian vein by obstructing it, though no case has been reported in which such a condition has been found. The case of Michel and Bichet, left sided, was one of habitual constipation, as were the cases of Dudley.

Out of 35 cases reported, in 14 the varicosity was unaccompanied by any gross lesion evidently sufficient to cause the continued congestion and dilatation, such as fibroid or adhesions. These are the cases to which we should give our attention. We will call them primary varicocele in contrast to the remaining, which were secondary or associated with retroversion, etc., and which need little consideration except an appreciation of the difficulties they may occasion and the proper method of treatment. The age of the patient ranges in the primary cases from the 26th to the 35th year, except in two, when the women were 40 and 51 years old respectively.

Besides the anatomic peculiarities influencing the production of primary varicocele, and as pointed out by Shober and Michel and Bichet, the periodic monthly engorgement of the uterus, and the

distention of veins necessitated by the demands of the pregnant uterus, exaggerate the tendency to distention, and are important natural and repeated etiologic factors not found in the male. Among the fourteen primary cases there were thirty-three children and twelve abortions, an average of two and one-half children and one abortion to each case. In several cases it is definitely stated that the symptoms dated from childbirth, and almost always followed from one to four or five years after the last childbirth, in but two cases occurring in nullipara. Pathologically, infection of the uterus as after childbirth, abortion and chronic metritis with its associated sub-involution, will conspire to produce a long persisting engorgement of these veins. The large vascular sinuses at the sides of the uterus are favorable atria for infection which would easily extend to the vein and produce a phlebitis and secondary dilatation analogous to that observed in the femoral vein; or again the perivascular lymphatics in the broad ligament may become inflamed and a subsequent contraction of this connective tissue offer an effective barrier to the free return of blood in the veins. In this connection we should draw attention to the fact that infection occurs more commonly on the left side. Just what relation exists between the anatomy and infection cannot, as yet, be said any more than one can say whether the preponderance of left-sided varicocele depends more upon the peculiar anatomy or upon the infection which also shows a predilection for this side. It is to be noted that of twelve cases of primary varicocele six occurred upon the left side alone, and in six it was bilateral, in no case occurring upon the right side alone. Gonorrheal affection seems to be seldom associated, as in only one of the cases has a specific infection been noted. Constitutional causes of passive congestion, such as organic heart disease are to be mentioned, although none of the cases reported had such a factor for a cause. Correction of the causative lesion may, and no doubt does, cure many cases, yet a long continued congestion will preclude the possibility of the veins regaining their normal tone and size.

Pathology.—The condition of the veins is vividly described by Kelly as follows: "The ovarian veins were found enormously dilated, appearing as large blue, tortuous, distended vessels, extending from the uterine extremity of the tube outward under the hilum of the ovary to the infundibulo-pelvic ligaments." Michel and Bichet describe them as follows: "On the left side, the upper part of the broad ligament was occupied by a bunch of enormous

varicose veins, extending from the uterine horn to the parietal peritoneum of the iliac fossa. The left ovary was atrophied and sclerocystic. The hilum was occupied by a large number of blood-vessels and lymphatics. The lymphatics were greatly distended. The vessels were cut at variable angles, giving the impression of great sinuosity. The external tunics of the arteries and veins were thickened and fibrous and formed a compact mesh. Some connective tissue of more recent formation was present and blood-vessels in the process of formation, denoting a state of chronic irritation." Porter reports on case three of Dudley as follows: "The walls of the arterioles were greatly thickened, and in some the lumen was diminished. Microscopic examination showed the capillaries distended and filled with blood in a state of partial pigmentary degeneration." The microscopic sections in case four, Dr. S. M. Miller, include a portion of the ovary, its hilum and the adjacent broad ligament. The veins are dilated and thinned, the capillaries are distended, and their walls show hyaline degeneration. There is an increase in the connective tissue of the broad ligament and ovary.

Association with Varicose Veins Elsewhere.—Cruveilhier reports an autopsy upon a case of varicose veins of the round ligaments so marked as to simulate double inguinal hernia. The veins of the broad ligament were also varicose, and also those of the lower extremity. In Kanavel's case there were varicose veins of the vulva and hemorrhoids. Both of Malin's cases had varicose veins of the legs, thighs and hemorrhoids.

Phleboliths.—Zinke reports finding one one and three-fourths inches long, and Brandt found one the size of a pea.

Influence of the Varix on the Ovary.—This is a lesion differing in no particular from the results of engorgement elsewhere, *i. e.*, congestion, irritation, formation of new capillaries, thickening and scar tissue, both in the ovary and broad ligament, with sclerosis of the ovary, the development of multiple small cysts from the inability of the Graafian follicles to rupture, and the development of this cystic ovary which, in the absence of adequate pelvic lesion, we are often at a loss to account for. Petit divides the manifestation into two stages—first, engorgement and edema, and, second, sclerosis ending in atrophy. These cysts, therefore, are due to a chronic interstitial oöpharitis (Reed). Michel and Bichet call this condition sclerocystic ovary. The ovary is hard, firm, white and smaller than normal. The cysts are usually multiple, from

two or three to twelve or fifteen in number, and are seen shining through the thin fibrous outer sheath of the ovary; usually of small size. The contents are a clear, yellowish serum. While there are other causes of sclerocystic ovary, it would seem that this may also be a factor. Out of the fourteen primary cases, in seven one or both ovaries were the seat of small cysts.

Rupture of Varicose Veins.—The literature shows few cases of rupture in which the diagnosis is indubitable. Many cases are reported as such without positive proof. In certain cases, however, the diagnosis has been made absolutely; but, recognizing how easy it would be to confuse this with the rupture of an extra-uterine pregnancy, only those cases have been included in which operation or post mortem has shown rupture definitely. Hence the cases reported by Emmett, Munde, Harrison, etc., should be excluded, leaving four cases in which we may be fairly sure of the condition. Of these only one, that of LeCerc, is a clear cut case of varicose veins rupturing uncomplicated by any other condition.

The four cases are the following:

Hirst's Case.—The patient went into collapse eighteen hours after a difficult third labor (craniotomy after forceps had failed). The patient died, and at post mortem a rupture of a blood vessel in the left broad ligament in its outermost portion was discovered. Hirst thinks that the dilatation was pathological, since the rupture occurred, for, although dilatation of veins is common during pregnancy, they do not rupture.

Billroth quotes two cases:

1. *Reported by Von Angers.*—In a case of extrauterine pregnancy of the second month a dark clot of blood was found in the right broad ligament and the plexus veins with vessels the size of a pen holder. One of these showed a rupture which had produced the fatal hemorrhage.

2. *Reported by LeCerc.*—A patient died after a hemorrhage continuing one half hour, and at post mortem varicose veins of the right ovary were found which showed rupture.

Freund.—Upon operation following collapse in a patient, a double tube was found, and in the septum between them was a mass of varicose blood vessels, one of which had ruptured. Serial section of the tubes showed no extrauterine pregnancy.

Allibut says that Winckel has shown that phleboliths may ulcerate through the walls of the veins and cause fatal hemorrhage,

but we have not been able to find any reports of cases. Winckel further says that the veins may rupture and the blood may extend under the peritoneum to the opposite side. This is readily credited, since Williams (quoted by Allibut) has shown by a study of injected specimens that a free communication exists between the two broad ligaments around the cervix, but Winckel bases his statement on cases of hematoma reported by Duvelius and Baumgarten, and their original papers show no proof that these originated in rupture of varicose veins.

Hence we conclude that although hemorrhage may occur as the result of rupture of varicose veins, it is probably rare. The diagnosis from rupture of extrauterine pregnancy in the early stage would be practically impossible, since the symptoms and physical findings might be almost identical, and the symptoms of collapse would not differ from those of collapse from any form of hemorrhage, while the pain of rupture into the broad ligament finds its counterpart similarly in the rupture of the extrauterine pregnancy into the broad ligament. So the absolute diagnosis might be difficult, and in doubtful cases serial section of the tube would be necessary to exclude extrauterine pregnancy with certainty.

A study of primary extraperitoneal hematoma not due to extrauterine pregnancy was made by A. Martin in 1882. He was able at that time to find six verified cases. This included Kühn's two cases, reported in 1874. To these he added four of his own, and, with Baumgarten's, published in the same year, there are in all eleven cases up to that time. These cases bore a family resemblance—were for the most part accompanied by menstrual disorder and retroversion. The hemorrhage occurred at the time of menstruation or was accompanied by uterine hemorrhage for which no cause was to be found. The symptoms were acute, were precipitated by traumatism, overwork or strain at the time of flow. The hemorrhage was attributed by Martin to relaxation of the broad ligament from the retroversion, with the consequent dilatation of arteries and arterials, with the attendant subinvolution of the uterus, the increased arterial pressure of menstruation, together with the strain of work or traumatism, conspiring to produce the rupture and the hemorrhage. These cases simply demonstrate that there are cases of pelvic hematoma for which we are at a loss to account. The question arises, May not some of these have been cases of rupture of varicose veins?

Williams read a paper before the American Gynecological Society in 1904 in which he discussed the intrapelvic hematomas following labor, and in relation to the etiology he says: "The earlier writers upon the subject were inclined to attribute the hemorrhage to the rupture of the varicose veins in the broad ligaments. The evidence in favor of such an occurrence, however, is extremely questionable, and, with the exception of Budin, finds no supporters among modern writers." In relation to this subject he quotes the case of Purefoy, Lloyd and Carton, in which the patient had been operated upon, ovariectomy done and the vessels of the broad ligament were noted at the time as being extremely varicose. In this case a hematoma followed each pregnancy. This case, with that of Hirst (which Williams does not note), in which the post mortem disclosed the cause to have been a ruptured vessel, at least leaves the question open for further study. It is interesting to note that a second operation was necessary in this case of Purefoy to stop bleeding from a vessel from which the ligature was supposed to have slipped; but when we remember the rupture of the vessels in Petit's case from manipulation and the cutting of the vessel by the ligature in Michel and Bichet's case, we wonder if the hemorrhage may not have been due to a cutting of the varicose veins by the ligature rather than a simple slipping.

Symptomatology.—A study of those cases in which there is no complicating condition to which the symptoms might be attributed is necessary to establish a clinical picture. In seven of these primary cases there is a fairly good clinical report (namely, in those of Michel and Bichet, Dudley, Malins, Petit, Kanavel, Hirst reported by Gelder, and Miller). We find that of seven cases five show profuse irregular menstruation. In the remaining two the operation was performed after the menopause, which, however, had been deferred until the forty-ninth year in each case. Pelvic pain was a marked symptom in three cases. Lumbar pain, emphasized by Dudley as being almost pathognomonic, is mentioned in but two cases (his own). Leucorrhea was marked in four. No statement is given in four cases as to whether the pain is increased on standing or not. In the remaining three this symptom was marked, and much stress has been laid upon it by some authors.

From the small number of case reports at hand, an absolute clinical picture is hard to define, but usually the symptoms would be about as those described on the following page.

1. Disturbance of the menstruation, which is apt to be prolonged, very profuse and frequent, coming on every fifteen days in the case of Michel and Bichet, and being almost continuous for four months previous to operation. In the case of Pozzi reported by Petit the hemorrhage was so severe as to lead to the diagnosis of fibroid.

2. Sense of fullness, weight and tension in the pelvis, present or increased on standing, walking or exertion, and relieved on assuming a reclining position. This was so distressing in Case 1 of Dudley that the patient could sit up but three hours daily, and his second case had been confined to the bed for twelve weeks. Of course, probably there are many cases in which symptoms are not present, just as varicose veins of the male in many cases do not present subjective symptoms. Some of the cases reported were found at operations performed for other lesions. In some the previous history is not detailed.

3. A study of the distinctly secondary cases adds little. Here the symptoms will be divisible into two classes, which, in a clinical picture, are so interwoven as to be inseparable; first, those referable to the varicose veins, and, second, those due to the associated pelvic lesion. Thus the backache, while it may be due to the varicose veins, may likewise be reflex from cervicitis or retroflexion and the leucorrhœal discharge is a product of the endocervicitis which is often present, or from the subinvolution and the endometritis. These in turn are apt to be augmented by the varicose veins. Then, the increase in size and weight of the uterus tends to drag its supports and distress the broad ligaments and the veins in them, and to occlude their circulation, which in turn tends to retard the proper involution; thus a vicious circle is formed, each lesion tending to provoke and exaggerate the other.

4. The sclerocystic ovary may be a source of irritation and pain, referred to the ovarian region, which may be present even during the intermenstrual period and worse at menstruation, or worse on standing and walking.

5. *The physical examination.*—Dudley was the first to diagnose this lesion and first palpated the veins by digital examination. The examination should be made with the patient in the standing position. Dudley palpates through the rectum. He says that "rectal examination showed a mass of veins palpable on the left side, palpable also through the vagina but not as veins, only as a

mass." And again, in Case 3, "The broad ligaments felt boggy, thickened and tender." The same boggy sensation has been noted by others, but its significance has not been appreciated, and wrong diagnoses have been made.

A subinvolted uterus is usually present; the cervix being noted as enlarged in four cases and the uterus in three. Hemorrhoids, varicose veins of the vulva, with a deep bluish tint to the mucous membrane of the vagina are sometimes noted. The patient is usually the mother of several children.

This picture is present in most cases. Although it may not be definitely diagnosed, may we not ask ourselves if the chain of symptoms is not sufficient, at least, to demand surgical interference.

We note the clinical histories of the following cases as illustrative of the symptomatology: Gelder's case. Woman aged 26, nullipara. For six months she suffered from pain in the left ovarian region, which increases on assuming the erect posture, worse on walking, disappears in three to five minutes on lying down. Malin's second case. Had backache, pain in the pelvis, and leucorrhea; uterus was enlarged. The woman was single, a nullipara. This is interesting as demonstrating that varicose veins can by passive congestion cause an enlargement of the uterus, and with it leucorrheal discharge and backache, and these could be attributed to no other reason. Dudley's case of primary varicocele had backache without enlargement of the uterus, and pain across the left side of the abdomen, relieved on lying down.

Diagnosis.—In the cases of Dudley only has the diagnosis been made before the operation, and an operation been deliberately planned and performed for the cure of the varicocele. In the other cases, the varicocele has been found incidentally during operation for other lesions, or it has been operated upon under a mistaken diagnosis; thus Pozzi operated under the diagnosis of fibroid of the uterus and found that the mass he had palpated was composed of dilated veins. The symptoms in his case were misleading, but were equally characteristic of fibroid or varicose veins. First, a history of continuous flow for four years. Second, uterus enlarged three to four finger breadths above the pubis. Third, mass on side of the uterus.

Michel and Bichet operated under the diagnosis of left-sided salpingitis, after finding the left broad ligament thickened and

tender to pressure. This might be a common error, if one were to pay insufficient attention to the antecedent history and symptoms. The case of Zinke is instructive. Possibly it should be classed as primary, but owing to the pregnancy it is excluded. Ectopic gestation was suspected because of painful uterine hemorrhages and pulsating tumor to the right of the uterus. A celiotomy revealed an intrauterine pregnancy and an aneurysmal varix, involving all of the right broad ligament, being about the size of a small fist. The wound was closed and the hemorrhage ceased, though no attempt was made to remove the mass and the woman was delivered at term of a healthy child. Zinke himself cannot explain why the hemorrhage ceased after the operation. The case of Gelder occurred with a good history and typical symptoms. Pain in the left ovarian region increased on standing and walking, relieved on lying down; flow normal and no intermenstrual bleeding; diagnosis copharitis. There was no lesion of ovary tube or uterus. It occurred in a nullipara. In our cases, the first was found in an operation for cystic ovary, the second for salpingitis, and the third for retroversion. We mention these illustrative cases to emphasize that it is well to bear in mind the possibility of the lesion in vague cases. First, where an indefinite boggy mass is palpable in the region of the tubes or broad ligament. Second, where the uterus is enlarged and menorrhagia, metrorrhagia or dysmenorrhea are present. Third, where a sense of fullness and weight is felt in the pelvis on walking or standing, relieved by lying down. Fourth, where there is pain in the ovaries on standing or more or less constant and exaggerated at the time of menstruation and the ovaries are tender to palpation. Fifth, the occurrence of varicose veins of the lower extremity, and especially of the vulva or round ligaments, should lead us to examine for varicosity.

The rupture of a varicose vein, though not common, does occur; the symptoms of rupture in no wise differ from those of ruptured ectopic gestation, and after rupture the diagnosis of hematocele would be the limit and further diagnosis would be immaterial, as the first indication for treatment in each condition is identical, namely, to open and secure the bleeding point and check the hemorrhage.

Treatment.—The treatment will vary in the secondary cases, according to other pelvic lesions that may demand correction, and the treatment of the veins will hinge upon whether tube or

ovary are to be left or are to be removed. Other pelvic lesions that may demand correction, and that may be considered as causative are to be treated, such as endometritis and infection in general. A retroversion is always to be corrected and adhesions destroyed. If there be an indication for removal of ovary and tube, the ablation of the veins will follow incidental to this. Many of the cases have been so treated (Kraemer, Wilson, Kanavel, Michel and Bichet). In but four instances were the veins ligated without removing tube and ovary.

Kelly, finding the condition at operation for adherent retroversion, stripped the veins and, holding the broad ligaments up to the light, passed ligatures in two places through the clear spaces found on transillumination, care being taken not to puncture the veins. Malins removed tube and ovary and excised a V-shaped piece of the broad ligament. Zinke lays stress on the division of the vessels after ligation similar to the technique of the operation in the male. Reed operates by several interrupted ligatures, cutting the veins in the interspaces between the ligatures.

Two ligatures, at least, should be passed, one near the uterine horn and the outermost in the broad ligature opposite the ovary but not beyond the ovary, lest its circulation be too greatly impaired. Excision of the portion, or, at least, division of the veins between the two ligatures, should be practiced. Care should be taken in tying the veins, since they are very friable and the ligature may cut through, giving rise to embarrassing hemorrhage, as in the case of Michel and Bichet. Pozzi, himself, ruptured the veins by manipulation during operation.

Results.—The disease is clinically curable. The results of operation are demonstrated best in the cases of uncomplicated varicose veins, and in which nothing was done beyond the simple ablation of the veins, as here we can judge the effect of the ablation unencumbered by other procedures to which the results might be attributed. There are four such cases (Hirst, Dudley cases three and four, and Miller). In each of these cases a cure resulted which could be attributed to nothing but ligation. In Malins' two cases of varicocele, both tube and ovary were removed with the veins. In each instance a cure resulted, but we cannot know how much to attribute to the removal of the ovaries.

The number of cases is too small for the deduction of ultimate conclusions. In only one case, however, is failure after operation

recorded, namely, that of Shober, where a trachelorrhaphy was performed and a retroversion corrected and the veins ligated. Afterwards the menstruation became regular and less profuse, but the symptoms recurred after sixteen months.

In closing, let us emphasize the following points:

1. Varicose veins of the broad ligament may exist as a primary lesion, uncomplicated by any other serious condition.
2. A distinct analogy to varicocele of the male is not proved in the reported cases beyond the fact of preponderance of left-sided cases.
3. A primary varicocele may, as such, give rise to a distinct syndrome upon which it is possible to make a probable diagnosis.
4. It may as a primary lesion of itself demand surgical interference.
5. The treatment consists in ligation and excision or section of the veins, with such treatment of the ovaries, tubes and uterus as may be indicated.
6. It may be found as an etiologic factor in the production of sclerocystic ovary and of subinvolution of the uterus.
7. The literature is in need of reports of primary cases uncomplicated by any other lesion.
8. It is often secondarily present or associated with other pelvic lesions, such as retroversion, etc.
9. While it may not be the causal lesion in these cases, recovery cannot be complete without correcting it. Correction of the primary lesion is essential, but this will not restore their tonicity to the veins, once they have become dilated, and the presence of dilated veins is a potential if not an active cause of trouble.
10. Rupture of the veins may occur and give rise to fatal hemorrhage. This has been demonstrated in but few cases, but it is likely to have occurred in other cases in which the diagnosis was not proved.

CASE REPORTS. PRIMARY VARICOCELE.

CASE I.—Dr. S. M. MILLER. Mrs. Richards, age 27, married; two children, one four years old, the other died three years ago, at the age of three years. One abortion, produced in July, 1903, on account of marked mental instability, amounting to insanity at times, at about the third month of pregnancy. Previous illnesses, none. Present illness, patient is excessively neurotic, has no self-control, is mentally irresponsible, easily irritated, and quickly

loses her temper. This condition has persisted since the beginning of pregnancy and since the abortion. She complains of pain in the ovarian region, which has been coming on gradually in the last two to three years; worse on the right side; worse at the time of menstruation; menstruation is rather profuse and protracted, lasting five to six days; bowels are regular.

Examination: The perineum and uterus are normal; uterus is in good position; the ovaries are excessively tender, the right ovary is enlarged and palpable, being the size of a hen's egg.

Operation, September 25, 1903. Laparotomy. Multiple small cysts of the right ovary were found, the largest was the size of a small hen's egg, the others the size of a pea and smaller. The right ovary was removed, the tube was left. The left ovary was the seat of a number of small cysts, the largest being the size of a pea. All were incised, contents evacuated, and the cyst wall removed. The contents consisted of a clear, yellowish serum. In the left broad ligament was a mass of dilated, engorged veins, large and knotted, even with the patient in the Trendelenberg position. These were ligated near the uterus and in the outermost portion of the broad ligament, and cut between the ligatures. Those on the right side were dilated, but less than those of the left. Result—One year after operation the patient is in good health, menstruates regularly and less profusely, has been free from pain, has increased in strength and weight, and is more stable mentally.

CASE II.—PETIT. Woman, age 32; five labors; all normal, but since the last, four years previous, flow is irregular, in the last four months almost continuous. Examined and operated upon by Pozzi. Uterus uniformly enlarged. No sign of fibroid; veins on both sides were enlarged. These were removed with both ovaries and tubes. The ovaries were large and sclerocystic.

CASE III.—DWIGHT reports post-mortem injection and dissection. First case reported: "The ovarian was three-fourths the size of the renal vein at its entrance into the latter. There was a plexus of dilated veins in the left broad ligament."

CASE IV.—Report by S. M. MILLER, associated with Dr. J. C. Roberts.

Mrs. Brecher, aged 29; two children, the last six years ago. Two abortions, the last four years ago. Gonorrheal infection three years ago, from which time she dates her trouble. At this

time she had a pelvic abscess or cellulitis, which was drained per vagina.

The Symptoms.—Chronic offensive leucorrheal discharge. Severe pelvic pain during and previous to menstruation, referred to each ovarian region, but worse on the right side, and less severe in the intermenstrual period, always exaggerated when she was on her feet very much.

Operation, February 10, 1904. Laparotomy. Uterus found in good position. There were adhesions between the sigmoid flexure and the left tube and ovary. The left ovary was the seat of many cysts, one being the size of a small hen's egg. The left ovary was removed, the tube was left. The left broad ligament was occupied by a mass of varicose veins, which were excised between two ligatures. The right ovary contained a number of small cysts, which were incised. The tubes were normal.

The adhesions were very friable about the left broad ligament, and although they may have been the original causative factor at the time of operation, they were not sufficient to explain the varicosity. Microscopic examination—Veins dilated, walls thickened, and show hyaline degeneration. There is an increase of the connective tissue of the broad ligament and ovary.

CASE V.—MALINS (1). Woman, aged 37, IV para, nine years since last childbirth; has been sick three years, suffering from pelvic pain, bearing down in character, and leucorrhea. Menorrhagia not mentioned. Examination shows hemorrhoids, varicose veins of the legs and inner aspect of thighs, worse on the left side. Treatment—After trying Hodge pessary for some time, he operated; found both broad ligaments enlarged; full of varicose veins; ligation near the uterus and near the sides of the pelvis; removing a V-shaped piece from the broad ligament; both tubes and both ovaries removed. Result—Recovery and subsequent freedom from symptoms.

CASE VI.—MALINS (2). Woman, age 33, single, nullipara. Symptoms—Backache, pain in pelvis, worse on the left side; hemorrhoids; menstruation profuse and painful, lasting a week; vaginal discharge. Examination—Uterus large; ovaries palpable through rectum. Treatment—Laparotomy and same operation as in first case. V-shaped excision of broad ligament; both ovaries and both tubes removed; almost a complete recovery followed, with freedom from symptoms. (It may be argued that removal of tubes and ovaries caused the cure by producing artificial menopause.)

CASE VII.—MICHEL and BICHET. Woman, age 24; regular in menstruation since sixteenth year; flowing every three weeks, during four to five days, very profuse, not accompanied by pain previous to the present trouble. The present illness came on five years ago, two months after childbirth; following a fall, she began to have pains in the lumbar region, and menstrual periods have been irregular, very abundant flow and frequent, every fifteen days. In the interval, profuse leucorrhea, with continuous pain in the pelvis and left side of abdomen, especially two to three days before and after periods. Examination—Thorax negative; abdomen, tenderness above left crural arch, otherwise negative; vaginal, cervix enlarged and soft, old laceration on the left side; bimanual palpitation shows the upper part of the left broad ligament thickened and tender on pressure; the uterus movable, otherwise negative. Habitual constipation. Diagnosis—Chronic cervicitis with left salpingitis; local treatment for a time, then operation, laparotomy; right side of pelvis found normal; on left side the upper part of the broad ligament is occupied by a bunch of enormous varicose veins, extending from the uterine horn to the parietal peritoneum of the iliac fossa; tubes slightly thickened; left ovary small, atrophied and sclerocystic; left ovary and tube excised. Recovery, with freedom from pain and the metro-rhagia. Examination of the ovary—Section through the ovary and vascular pedicle shows corpus luteum and two small cysts, each the size of a small pea; the cortical portion normal; many ovules and cicatrices, result of previous ovulation; the hilum of the organ occupied by a large number of blood vessels and lymphatics; lymphatics are greatly distended; the vessels are cut at variable angles, giving the impression of great sinuosity. No lesion of the internal tunic in either arteries or veins, but the more external tunics are much thickened and fibrous, and form a compact mesh with the walls of adjacent vessels. At some points the connected tissue appears of more recent formation, holding small vessels in process of growth, denoting a state of chronic irritation.

CASE VIII. ALLEN B. KANAVAL. Mrs. Minnie Stroh, seen in service of Dr. Franklin H. Martin, Post-Graduate Hospital; married, age 33; family history negative; personal history, married at 19 years of age; health has always been good, except the last three years; no sickness of any kind previous to the present trouble; menstruation began at twelve years; regular every

twenty-eight days, flow lasting four to five days; no pain up to the last three years. Number of children, five, from three to thirteen years of age; the last one born three years ago, dead. She gives a history of carrying a child in utero six weeks beyond her time; after confinement she developed a fever, and was in bed three weeks; during the entire pregnancy she was weak and nervous. Present trouble—Since her last confinement, three years ago, she has had constant pain, bearing down in character; pain and tenderness in the left inguinal region; pain radiates down the legs; flows nearly all the time, but much worse at the monthly periods; for two or three days before the regular period it may not be present; the monthly flow began to increase in amount seven years ago, and has grown worse ever since, especially during the last two years. No pain in lumbar region. No hemorrhoids. There are also varicose veins in the vulva, very large and tortuous; these have been present since the birth of her first child, twelve years ago. Operation—Curettage, double salpingo-oophorectomy and ventrosuspension. Incision in the median line; both the broad ligaments were seen to be filled with large mass of varicose veins, no inflammation about them, no adhesions; both ovaries were slightly enlarged, with small cysts, uterus slightly enlarged, position normal; kidney, gall-bladder and liver are normal to palpation. Result—Relief of symptoms, both pain and excessive flow. Present condition—Chronic nephritis.

CASE IX.—DUDLEY. (1). Woman, aged 40; one child, instrumental delivery; three abortions; some leucorrhea, marked constipation; duration, ten years; pain on left side, increased on standing or walking; pain in the lumbar region; Dr. Mann operated in 1881 for lacerated cervix; for twenty months previously she could not sit up for more than three hours daily. Examination, May 4, 1887; uterus, cervix, and perineum normal; examination per rectum showed double prolapsed ovaries and a large cluster of dilated veins in each broad ligament. Operation, May 10, both ovaries and tubes removed, tubes normal; the ovaries were atrophied and dotted with small cysts. Recovery and relief from pain; she was free from symptoms fourteen months afterwards.

CASE X.—DUDLEY (3). Woman, aged 53, married twenty-six years; III para and one miscarriage; last child thirteen years before. A history of infection following this birth. Was confined to the bed for twelve weeks; there was no metrorrhagia or men-

orrhagia, no leucorrhea; painful and frequent menstruation; marked constipation; menopause a year and a half ago. Examination—Uterus small; there is a small, tender thickening behind each broad ligament; broad ligaments feel boggy, thickened and tender; rectal examination the same. Operation—Both broad ligaments quilted and mass removed. Result—Recovery six and a half months afterwards.

PORTER.—Report on the specimen in Case III of Dudley. Ovaries slightly enlarged, contained a few small cysts; the walls of the arterioles in the stroma were generally thickened; in some the lumen was diminished, in others it was increased; tube showed no abnormality; panpiniform plexus in the broad ligament; the walls were thickened and unusually tortuous. That this engorgement was of long duration is sustained by the condition of the capillaries. Microscopic examination—Capillaries distended and filled with blood in a state of partial pigmentary degeneration; the walls of the arteries were thickened.

CASE XI.—DUDLEY (4). Woman, aged fifty, married thirty-two years; IV para and one miscarriage; complains of profuse leucorrhea; marked constipation; locomotion painful, constant pain in left side and back and across the abdomen; pain disappears on assuming a reclining position and reappears after standing half an hour. Menopause one year previously. Examination—Thickening and tenderness on the left side of pelvis, some pus in the urine. Operation—Removal of varix from left broad ligament. Result—Functional cure as regards pain and symptoms; urine still contains pus.

CASE XII.—HIRST, reported by Dr. E. E. GELDER. Mrs. E. G., age 26, married; labors, none; miscarriages, none; menstrual history, menstruation began at 13, regular, character of the flow normal, no intermenstrual bleeding. Present illness—For the last six months she has suffered from pain in the left ovarian region, which increases on assuming the erect posture; it is worse when walking, and disappears in five minutes when she lies down. Vaginal examination negative. Clinical diagnosis, oophoritis. Operation—Laparotomy; the uterus normal and in normal position; both tubes and both ovaries were normal; left ovarian veins varicosed—these were ligated. Result—Relief of all symptoms.

CASE XIII.—FREUND. Operation—Double tube was found; in the septum that united them was a large mass of blood vessels; a large vein had ruptured and caused an almost lethal hemorrhage; serial section of the tube showed no sign of pregnancy.

CASE XIV.—WILSON. Woman, aged 35; six children and three miscarriages. Symptoms—Pelvic pain, backache, hemorrhages continuing for two weeks from each menstrual period. Examination—Deep bilateral laceration of the os, uterus enlarged, movable, position normal; movable tumor the size of a walnut to the right of the uterus, sensitive to pressure; the left broad ligament tense, but nothing palpable. Operation—Right ovary cystic, tube normal; left ovary cystic, but smaller than the right; in the left broad ligament a plexus of enlarged veins, some three-eighths of an inch in diameter, tortuous, evenly dilated, not knotty; the right broad ligament normal; a double ligature was passed after expressing the blood from the veins, and left broad ligament removed; both ovaries removed.

REFERENCES.

1. Dwight: Boston Medical and Surgical Journal, Feb. 15, 1877.
2. Kelly: Johns Hopkins Hospital Bulletin, vol. 1, 1889-90.
3. Kraemer: Cincinnati Lancet-Clinic, 1900, vol. 45.
4. Dudley: New York Medical Journal, Aug., 1888, p. 147.
5. Malins: American Journal Medical Sciences, 1889, XCVIII., p. 340.
6. Hirst: Medical News, 1890, vol. 56.
7. Wilson: Medical News, 1891, vol. 58, p. 694.
8. Tait: Edinburgh Medical Journal, 1889-90, vol. 35, p. 14.
9. Shober: AMERICAN JOURNAL OF OBSTETRICS, vol. 43, p. 664.
10. Michel and Bichot: Arch. Generales de Med. (Paris), June 9, 1903, p. 1419.
11. Winckel: Lehrbuch der Frauenkrankheiten, 1886; translation of Williams and Parvin, 1887.
12. Allibut's System: Rupture of Veins of Pampiniform Plexus.
13. Pozzi: Text Book of Gynecology, vol. 2.
14. Cruveilhier: Bull. Soc. Anat. de Paris, 1827.
15. Richet: Trait d. Anatomie Medico-Chir., 1854, p. 753 (quoted by Emmett).
16. DeValz: These Pour la Doctorat Utero-Ovarian Varicocoele, 1858.
17. Billroth: Handbuch d. Frauenkrankheiten, 1879, 1886, Band 2, p. 951.
18. Scanzoni: Diseases of Women, Amer. Edit., 1861, p. 363.
19. Roussan: These de Paris (quoted in Revue de Therapeutique), 1892, p. 375.
20. Baldy: AMERICAN JOURNAL OF OBSTETRICS.
21. Emmett: Prin. & Practice of Gynecology, 1884, p. 233.
22. A. Martin: Zeitschrift für Geburtshülfe u. Gynecology, 1882, vol. 8.
23. Baumgarten: Deutsche Medicinische Wochenschrift, 1882, No. 36.
24. Freund: Centralblatt für Gynecologie, 1901, No. 25.
25. Jauny: Gazetta Degli Ospedali e delle Cliniche, Oct. 23, 1898. (Report of Congress of Italian Surgeons at Turin.)
26. Herbet: Annales de Gynecologie et d'Obst., Paris, 1897, p. 153, Vol. XLVII.

27. Düvelius: Archiv. für Gynecologie, 1884, Vol. XXIII., p. 107.
28. Courty: Diseases of the Uterus (cited by Malins), p. 467.
29. Virchow: Die Krankhaften Geschwülsten, Berlin, 1863.
30. Coe: AMER. JOURNAL OF OBSTETRICS, 1889, Vol. XXII.
31. Munde: AMER. JOURNAL OF OBSTETRICS, 1901, Vol. XLIII.
32. Beigel: Centralblatt für Gynecologie (cited by Martin), Bd. XI., p. 577.
33. Kober: Centralblatt für Gynecologie, Leipsic, 1901, Vol. XXV.
34. Petit: Arch. d'Obst. et de Gynecologie, Paris, 1891, Vol. VI.
35. Harrison: Transactions of N. Y. Med. Assn., Vol. II, p. 431.
36. Betschler: Klin. Beiträge zu Gynecologie, Breslau, 1862, p. 136.
37. Konrad: Centralblatt für Gynecologie, 1881, p. 574.
38. Zinke: Text Book of Gynecology, Reed, 1901, p. 683-685.
39. Fritsch: Krankheiten der Frauen, (quoted by Kober).
40. Williams: AMER. JOURNAL OF OBSTETRICS, October, 1904.

TRANSACTIONS OF THE NEW YORK OBSTETRICAL SOCIETY.

Meeting of February 14, 1905.

The President, J. RIDDLE GOFFE, M.D., in the Chair.

FIBROID TUMOR OF THE UTERUS AS A CAUSE OF CANCER.

DR. J. RIDDLE GOFFE.—In spite of the most careful clinical study and profound laboratory investigation cancer remains an unsolved problem. The genetic factor in the life history of a cancerous cell is as great a mystery as ever. There are some things about cancer, however, that we do know or believe we know, that are of practical value. One is that cancer is primarily a local disease and another fact is that chronic irritation is the exciting or predisposing or the conditional cause of the appearance of cancer.

In cancer of the uterus the rôle played by lacerations of the cervix as a causative factor has been long recognized. Whether the disease, under these circumstances, originates in the scar tissue at the angle of the tear, or in adjacent cells, due to irritations that interfere with their nutrition and development, is an open question. The clinical fact remains, however, that the laceration, in the final analysis, the predisposing or conditioning cause.

Another source of chronic irritation in the uterus, which has been attracting the attention of some of our best investigators as a probable cause of cancer, is fibroid tumor. Fibroid tumors, as is well known, occasionally undergo a degenerative process, terminating in sarcoma, but never in carcinoma.

It is not of degenerations, however, that I wish to speak to-night, but of fibroid tumors as a predisposing or conditioning cause of carcinoma, due to the interference through their simple presence in the nutrition of the adjacent tissues, *i.e.*, a chronic irritation. The frequency with which carcinoma of the uterus has been observed in association with fibroids has led to the suspicion that they might be the predisposing cause. When this association was found, especially in virgins in which the uterus naturally had not been subjected to any of the irritating causes which we recognize as predisposing to cancer, the suspicion gained something of the character of a conviction. Dr. Cullen, in a recent presentation before the N. Y. County Medical Society, declared that these considerations had led him to examine the endometrium in a large number of fibroid uteri, that had been removed on account of the fibroid condition, but without any suspicion of malignancy. In some of these he had discovered circumscribed carcinoma in the tissue immediately underlying the tumor, in others there was present an altered condition of the

epithelium which was suspicious of a precancerous stage. Thus far only has this investigation proceeded, but the discoveries are sufficient to attract great interest and make it a subject of careful clinical as well as laboratory investigation. Along this line of inquiry I have two uteri to submit to you for your judgment as to their value as confirmatory of this theory.

CASE I.—This specimen is a small uterus surmounted at the summit of the fundus by an intramural fibroid three centimeters in diameter. In the mucous membrane just beneath this tumor, is what the pathologist has pronounced a flat-celled carcinoma. It is confined to the fundus and does not involve the cervix at all. This specimen was removed from a maiden lady, fifty-nine years of age, a member of a prominent Massachusetts family. The specimen was removed *en masse* by vaginal hysterectomy. Some difficulty was experienced in its extraction, it being necessary to perform double episiotomy to obtain sufficient room. This case presents the most convincing evidence we can have that fibroid tumor is the exciting cause of cancer, as the patient is a virgin, born and bred in all the comforts of life, and the uterus free from all the sources of irritation that accompany married life and pregnancy.

CASE II.—The second specimen is not so convincing, although very suggestive. It was removed from a patient 45 years of age, the mother of four children, the last nineteen years ago. Menstrual history was normal until the last period, three weeks ago, which was excessive in amount and has continued to the present time. Five months ago the patient noticed a slight spotting after sexual intercourse, and this has continued at intervals since that time. There has never been any pain. Upon examination the uterus was found very large but freely movable, with no perceptible invasion of the surrounding tissues. Panhysterectomy was done by abdominal section. At the operation no invasion of the broad ligaments was discoverable and no pelvic glands could be palpated. Upon section of the uterus the walls were found more than double their normal thickness and the endometrium was completely invaded with carcinoma throughout its entire extent, the disease extending down through the cervix and invading the posterior lip on its vaginal surface. We know that cancer beginning in the cervix tends to invade the broad ligaments on either side and rarely extends up into the fundus. The character of the invasion in this case, therefore, suggests that the disease originated at the fundus and extended down the cervix. Upon searching for a cause of irritation we found the fundus capped by this small fibroid tumor about one and one-half inches in diameter. The musculature of the uterus as shown in section is also studded with fibroid foci. It is a logical inference therefore, that these fibroids may have been the initiating cause of the cancer.

While these two cases are not by any means convincing, they

are, to say the least, illustrative and suggestive of the possibility that fibroids may be the irritating factor in the development of cancer of the uterus.

Granting that this theory on the origin of cancer of the uterus has a reasonable basis for belief, what is its practical bearing upon the treatment of fibroid tumors? To my mind it adds another convincing argument to the line of treatment I have been advocating for the past two or three years, viz., that all fibroid tumors, wherever situated and whatever their size, and regardless of the age of the patient, except in extreme old age, should be removed forthwith. If the tumor or tumors are small, they can be removed by a comparatively simple operation per vaginam. When too large to be conveniently handled by that route, they can be removed by abdominal section, leaving the uterus, in both instances, as a healthy functioning organ. In extreme cases in which the fibroid development involves the entire fundus and body of the uterus, either supravaginal or panhysterectomy is indicated. I show you here three specimens illustrating these three methods of operation. In the first jar are two small fibroids, the first about half a centimeter in diameter and the second an oblong tumor something over one centimeter in diameter. These are fibroid polypi and were removed from the interior of the uterus by anterior vaginal section and hemisection of the anterior wall of the uterus to the fundus, at which points the polyps were located. The patient was a young woman suffering from hemorrhages. The second jar contains a symmetrical spherical fibroid, four centimeters in diameter, which was situated between the mucous membrane and the anterior muscular wall of the uterus. The patient was a woman of 34 who had borne one child, four years ago. This tumor was removed by abdominal section, the anterior wall of the uterus was incised throughout its entire length, the bladder having been stripped down. The tumor was then shelled out and the uterine incision closed. The bladder was retained in its normal position by suture. The third specimen is an irregular fibroid development involving the entire fundus and body of the uterus. The pole of each ovary is converted into a large cyst, and two pedunculated masses have undergone calcareous degeneration. These were wedged in the pelvis and by the sharp spicules were wounding the peritoneum causing localized inflammation. For several days previous to operation this patient had a temperature ranging from 102 to 104 degrees. The temperature dropped to normal immediately after operation. The tumor was removed by supravaginal hysterectomy, the cervix being covered with peritoneal flaps in accordance with my method.

DR. WM. M. PORT.—I should like to ask Dr. Goffe if he was able to show that the carcinoma developed directly from the fibers of the growth, or did it develop from the mucous membrane. There was some change in the epithelium and the presence of the

fibroid growth enhanced the possibility of carcinoma. We believe at present that fibroids are predisposing causes of cancerous degeneration in tissues known to be the habitat of cancer. Owing, then, to this tendency of fibroids (as recent investigations appear to show), to predispose to cancer, I believe all the growth should be removed.

I take it as a clinical experience that a larger number of carcinomata are disassociated with fibroid growths than associated with them; that I believe is the view most of us take. Few are willing to go so far as to speak of these growths being the beginnings of cancer. This is a question we all should consider when dealing with these growths. But this question presents another phase. While prepared to take the position advocated by a number of operators in our line that the presence of these fibrous growths necessarily condemn the uterus to be removed, I think very few will go so far as to say that a woman capable of bearing children, under the age of 30 years, should be subjected to the operation for the removal of her uterus because of the presence of fibroids in it. I presume Dr. Goffe does not contend that we should go as far as that. For instance, here comes a young woman recently married, and who is very anxious to have a child. An examination is made and two or three fibroid growths are found in the depths of the uterus. In such a case are we not warranted in taking issue with the statement that all these should be condemned to removal of the uterus? I presume he means removal of the entire uterus.

DR. HERMAN J. BOLDT.—I think that Dr. Goffe has misunderstood Cullen's statements. Cullen simply corroborates the investigations of von Recklinghausen, that there are myomata which contain glandular structure, remnants of the Wolffian bodies, and from such glandular elements we may have the change into carcinoma. This form of tumor differs, however, from the variety ordinarily known as uterine fibroid. It is correctly called adenomyoma, because of the glandular formations found within such neoplasms. The specimens shown by Dr. Goffe do not, in my opinion, bear any relation to cause and effect, the carcinomatous degeneration of the uterine mucosa must be looked upon as a mere coincidence. I have never seen a single instance of carcinomatous degeneration of a fibromyoma among a large number of myomatous uteri removed by me, although I have in a number of cases seen cancer and fibromyoma associated in the same specimen. When a fibromyoma gives rise to symptoms, its removal should be advised, and if the enucleation of the neoplasm can readily be done, this course should be followed rather than to remove the entire uterus. To operate for the removal of a fibromyoma, just because it is known to be present, when such neoplasm does not cause disturbance, is not justifiable. Adenomyoma cannot be enucleated, because they have no capsule;

therefore, uteri, the seat of such neoplasm must usually be sacrificed if an operation becomes necessary.

DR. JOSEPH BRETTAUER.—Not having been present when Dr. Goffe presented his specimens, I am only judging from what has been said in the discussion as to the points under consideration. If carcinoma and fibroids of the uterus were in any way connected, we surely would find some cases of secondary growths in other organs reported. I know of none. Furthermore, those who are in the habit of doing supravaginal amputation instead of total hysterectomy would have seen carcinoma in the cervix more frequently, considering the large number of such operations. I personally think that the simultaneous occurrence of carcinoma and fibroid in the uterus is only a matter of coincidence, the one being entirely independent of the other.

DR. H. N. VINEBERG.—I think we should be extremely guarded regarding what we say about fibroids undergoing dangerous degeneration. If it were true that fibroids underwent carcinomatous degeneration, metastases would occur after removal, and such recurrences never occur. I believe as we are getting older we are getting more and more conservative, for we are constantly meeting with patients with uteri intact who tell us that they had been advised to have fibroids removed together with the uterus long ago. If we state that fibroids although only occasionally undergo carcinomatous degeneration, we should then have to take the ground that every fibroid as soon as detected ought to be removed. Now two of our oldest and most prominent members have stated to-night that fibroids should not be removed unless they are causing symptoms. This is an attitude in which every consulting gynecologist will concur. But it is not a logical position if we assert that these growths are prone to become cancerous. We should be clear upon this point. Occasionally a fibroid uterus may become a cancerous growth, but this is merely an association of the two growths and they do not stand in the relation of cause and effect.

DR. J. RIDDLE GOFFE.—There are one or two points that I should like to make which are quite distant from the paper but brought out by the course the discussion has taken. I did not come here to make any assertion or attempt to prove that fibroid tumors undergo cancerous degeneration. I made no comment upon that at all, except to say that not infrequently cases are reported of these tumors undergoing carcinomatous degeneration in which, as a matter of fact, no degeneration has occurred, but the two diseases are found associated. The point to be emphasized is that any irritation may be the exciting cause of cancer in tissues adjacent to the point of irritation; fibroid tumors in the uterus are points of irritation, and therefore, it is possible that they may be exciting causes of cancer. This is a suggestion that has been thrown out, and evidence is gradually accumulating to establish it. The specimens presented by me are also evidences in that

direction. It has not been conclusively demonstrated that the relation of cause and effect is strongly intimated and, therefore, it would be better to have a tumor of that character removed than to have it remain there and continue its irritation. Secondly, I do not advocate the removal of the uterus in cases of fibroid when it can be avoided. The point I made was that these tumors should be attacked early because they are sources of trouble. The accumulating evidence that they may be predisposing causes of cancer is an additional reason for removing them promptly when discovered, wherever situated, whatever their size and whatever the age of the patient. But the operation should be myomectomy and not hysterectomy. They can be attacked through the vagina or by way of the abdomen, but the uterus should be left intact. The point I wish to emphasize is that these tumors are sources of irritation and may cause cancer; and because of the possibility of cancerous changes in adjacent tissues as well as other complications and degenerations, these tumors should be removed, wherever found.

RUPTURE OF CERVIX AND LOWER UTERINE SEGMENT WITH A DILATOR.—INTRAPERITONEAL HEMORRHAGE.—ABDOMINAL SECTION.—DEATH.

DR. HERMAN J. BOLDT.—G. G., seen in consultation February 12, when the following history was given by her family physician. Patient 27 years old, married 8 years, three children, the last sixteen months ago. She recently (within 48 hours), had had an abortion and to stop the continuous bleeding the doctor purposed to curette. He used a dilator prior to the intended use of the curette, and at once the structures gave way; a very profuse hemorrhage occurred and the woman collapsed. On passing the finger into the rent he entered the peritoneal cavity and felt intestines. Further manipulation was abstained from, except that a large strip of iodoform gauze was packed into the tear. I saw her five hours later, she had then partially rallied from the collapse and complained of intense abdominal pain and vomiting, with much thirst. Anemia extreme; pulse 140. Because of the slippery condition of the streets the transportation to the hospital was greatly delayed, so that she did not arrive until after midnight. The abdomen was distended, pulse poor quality and very rapid. Symptomatically there was a beginning peritonitis. On opening the abdomen a large quantity of fluid and clotted blood was found. The intestines were much distended and had lost their normal appearance. A dull hyperemia was present showing that peritonitis had begun. After washing out the blood the woman was placed in extreme pelvis elevation. The tear was found on the right side, going entirely through the cervix between the folds of the broad ligament and a trifle above it, probably having torn through a branch of the uterine artery, which accounted for the profuse hemorrhage. The broad ligament had

an extensivé tear through its posterior reflection. The serosa of the uterus had been lifted off by a large hematoma which formed on the anterior surface. Active bleeding had ceased. It was, therefore, considered best to adopt a conservative plan of procedure. Most of the blood having been cleaned out, the pelvis on the side of the tear was packed with sterile gauze in such a way as to compress the vessels and at the same time to shut off the uterine cavity to prevent infection by contamination. The abdomen was then closed, bringing the end of the gauze out at the lower angle of the wound. Fifteen hundred c.c. saline infusion was injected into a vein. The condition of the woman was poor. Patient's pulse remained of poor quality, rate 160 on evening of February 13. Death ensued on February 14. Unfortunately no autopsy could be obtained.

DISCUSSION ON

THE CAUSES OF DEATH FOLLOWING ABDOMINAL OPERATIONS.

Infections: Source, Prevention, Treatment.

DR. WM. M. POLK.—The source of infection is, of course, the pathogenic germ or germs underlying inflammation. Some more virulent than others, but all opposed to physiological forces. We are concerned to-night with the many lines of communication through which they gain access to the wounds we make. Were these wounds less intimately related to so vital an organ as the peritoneal sac, we might afford a less searching inquiry than is proposed by our President this evening. But when we reflect that looseness in dealing with this problem means death to so many of our patients, we welcome the opportunity to take stock of our methods and work.

Eternal vigilance is the price of more things than liberty. It is essential to freedom from wound infection. But people differ in their conceptions of vigilance and this brings up the question of the individual conception of cleanliness, the essential factor in combating infection. Daily experience tells us that ideas of personal cleanliness vary considerably. No matter what the cause, the effect is seen in the varying results obtained in the same hospital by different workers, surgeons and nurses. The testing point then in seeking out the source of infection is removed from the contemplation of the pathogenic germ and fluids to the habitat of their destructive forces, and the first of these is in the lax conception of personal cleanliness on the part of those who come in contact in every way with fresh wounds. The higher the ideal of cleanliness the surer the work done to secure it. Presuming that the operator is clean, his first duty is to make himself sure that those who aid him fulfill his ideals. Taking, then, the accepted methods of combating wound infection, let him instruct his aids as to the best manner in which to fulfill them, and if every hand is then honest, there is little to fear from the outside. But the human mind is an uncertain quantity and should not be

overweighted with too much detail. Simplicity of procedure is then to be commended, rather than elaboration. Study to do work in the simplest and most direct way compatible with the end sought.

It is not worth while going into the question of just how ligatures, sponges or pads, instruments, gloves and other accessories of an operation should be prepared, for this would be to this audience but the alphabet of our subject. There is one end to be attained, viz., sterility of everything brought in contact with a wound. The manner of accomplishing this is well understood; it remains for us to be sure that it is done.

Turning now to the sources of infection inherent to the wound itself, we approach a more difficult problem. One which deals with condition of the tissues wounded and with the resistance of the patient. First as to the condition of the operative field. The normal skin is a well recognized source of infection. No one can say beforehand how deeply into its numerous glands and follicles pathogenic germs may have penetrated, but it is a fair assumption that proper cleansing of the surface will so far reduce this element of infection as to render futile the efforts of the little that may remain concealed beneath. A suppurating skin surface cannot be made even approximately sterile, and incision through it into such delicate regions as the peritoneum or open plains of cellular tissue should, if possible, be avoided—but if made extraordinary care should be taken to protect and cleanse the more delicate and susceptible structures beneath—and yet it is remarkable how much infecting material a sound peritoneum will tolerate. But a wounded peritoneum, or one containing already fluid, or one too long exposed or too freely manipulated is robbed of much of its resisting power. Hence the need for the most painstaking care on the part of the operator whenever that sac is involved. The scope of my subject would relieve me from the task of dealing with the vagina as a source of infection were it not that we so often are compelled to drain through it. This makes it incumbent upon everyone who (at any rate), enters the female abdomen at any point below the umbilicus to see that this canal is clean. I doubt if any vagina can be made even approximately sterile, but gravity comes to our aid and by holding such infiltration as may originate there in the bottom of the pelvis, gives time for the peritoneum to erect its barriers against a general invasion. The exception to this is to be found in cases such as carcinomatous ulceration and when cleansing of the vagina and cervix or vulva has been neglected.

Turning next to conditions within the abdomen—the intestines first engage our attention. They are a constant menace and cannot be handled with too great care, and, if wounded, too promptly or too thoroughly repaired. Long operations always expose the patient to defective action on their part, and even if we could feel sure that no pathogenic germ could pass through its

inert though uninjured wall, yet the nerve inaction is a menace in that it promotes adhesions, while by completing obstruction comes death. Therefore, it is incumbent upon us to clear them from the field as much as anatomical attachments will permit, and for this purpose a plentiful supply of gauze is imperative.

In dealing with collections of pus within the abdomen, precise dextrous ingenuity comes into play as fully as in any field that can be entered. The appliances for accomplishing this are well it is only necessary to employ them judiciously, and herein lies a supreme test of the operator's conception of cleanliness and his ability to enforce them upon himself and his aids.

The adequate treatment of surfaces denuded of peritoneum is of prime importance in this problem of infection. Such spots have a feeble resistance to infection compared to the normal surface, hence a need for covering them whenever possible. They are not merely foci for a dangerous and speedy infection, but by their proneness to become attached to impending viscera may ultimately mar a beneficent work. But we are frequently beset by the horns of a dilemma when working in the abdomen, and in aiming to avoid one we must not be impaled on the other; therefore judgment must be exercised in dealing with such accidents as raw surfaces that we may avoid too long exposure of the delicate structures in the field.

We now come to the question of the resistance of the patient, a fruitful source of disaster in our work, where opportunity for preparation of the patient is so often at our convenience is the temptation to overestimate the resistance of the patient. The only way to avoid this error is the careful study of their resources as afforded by the state of the organs in general. When, therefore, an emergency such as hemorrhage or the rupture of a pus sac does not call for immediate action give heed to the general condition available for resistance to the unavoidable demands of the operation.

DEATHS FROM INTESTINAL OBSTRUCTION AFTER ABDOMINAL SECTION.

DR. JOSEPH BRETTAUER.—When asked by your Chairman to take part in the discussion of the subject before us to-night, with a specific view as to the occurrence of intestinal obstruction as a cause of death following abdominal incision, I hesitated to accept the task, being conscious of my limited personal experience. Since, having looked over my records of abdominal surgery for twelve years, I find myself in a position even less qualified to discuss the subject, as there is not one case mentioned of intestinal obstruction (post-operative, abdominal), as a cause of death; I find a record of a distinct and clear case after vaginal hysterectomy, which I suppose was recognized too late, as a second operation was of no avail. While I do not place myself on a pedestal like a writer who, in 1893 said: "Of peritonitis follow-

ing an operation, I know nothing, except that in a general way it is treated by salines," I feel that my good fortune in not losing one out of several hundred of cases from intestinal obstruction, is due not only to the strictly limited gynecological field of my material, but also to certain methods of technique and after-treatment.

During my service as assistant at a large surgical clinic, I saw a number of cases which were placed on record as deaths from peritonitis, which would now undoubtedly be recognized as cases of intestinal obstruction; they are still vivid in my mind and make it somewhat easier for me to treat the subject, though in a general way.

There are several causes of post-operative intestinal obstruction, all more or less mechanical at the outset. A loop of intestine may be adherent to the raw surface or to the pedicle; several loops around an inflammatory focus may become adherent to each other, a slit in the omentum may cause an internal incarceration, or the mesentery of a loop of intestine may become twisted and form a volvulus; finally by some accident a loop of intestine may be included in the suture closing the abdominal incision. These are the most common causes for the occurrence of post-operative ileus; on account of the presence of adhesions the bowel, during peristalsis is bent upon itself; at first the lumen is only partly obstructed, but with the increase of distention in the afferent part, obstruction becomes more and more complete and the adhesions firmer; the circulation of that particular loop is interfered with to such an extent that the walls become gangrenous, the localized process becomes general and the ultimate picture is one of acute sepsis, which cannot be differentiated from that of acute septic peritonitis. When we consider the etiology of ileus, it is at once apparent why cases where operation was performed for some acute inflammatory trouble within the peritoneal cavity, lead in the frequency of this complication, especially cases of acute gangrenous appendicitis. These, however, belong more to the domain of the general surgeon. We are more interested in the cases of pelvic inflammation which come next in order of frequency. Statistically, other conditions for which operations were performed, like fibroids, cysts, tubal pregnancies, etc., are of no import when compared with the number of cases of ileus occurring after the removal of the appendages during an acute inflammatory process. I am sure that those of you who, during their career as surgeons, had a period when they deemed it advisable to operate during the acute stage of septic or other infection, will corroborate me in the statement that then, and only then, intestinal obstruction was met with rather frequently; those were the days of the glass drainage tube and of gauze packings, when the favorable aspect of the post-operative prognosis depended upon the number of yards of yellow gauze stowed away in the pelvis. To me who have never passed through such a period, it was astonishing that ileus did not occur oftener.

The cases which I have seen were of this character, and as well as I can remember none of them recovered. They were either believed to be cases of septic infection with general peritonitis from the onset, or were recognized only in extremis.

It is true there are instances of early intestinal obstruction which are so nearly like the type of a peritonitis, that a differential diagnosis is barely possible; fortunately they are rare.

The typical picture of a case of intestinal obstruction is as follows: The patient has recovered from the effects of the anesthetic and shock; after the third day the functions of the bowels are established and everything seems to run smoothly, until at the end of the first or the beginning of the second week an inability to defecate, sometimes accomplished by severe colicky pains, is noticed; the pain becomes more frequent, distinctly paroxysmal, abdomen distended, pulse and temperature normal or slightly elevated; efforts to move the bowels may at first be followed by the escape of some gas and small fecal matter, but after twenty-four hours are without result, nausea, followed by vomiting sets in. The typical facial expression of a patient with incarcerated hernia is never missed. Of course, left to destiny, there is only one outcome possible at this stage; gradually pulse and temperature rise, a sudden collapse and the end. All this may happen within 48 hours or be prolonged for some days, dependent upon the general condition of the patient and the ability to resist the resulting septic toxemia. Were it always like this I am sure ileus would be eliminated as a cause of death, and only mentioned as an unpleasant complication, as anyone, even with limited experience, would recognize the condition and take prompt action.

After operations during which a severe handling of the intestines could not be avoided, either on account of adhesions or on account of the topographical relations of large growths, very often a condition is met with which used to be called pseudoileus, and has now been properly named "paralytic ileus." It may simply be due to an irritation of the inhibitory centers through mechanical insults to the visceral peritoneum, or may be an initial symptom of septic peritonitis. Now in this condition we find the distention, the nausea, possibly the vomiting; the pain, however, if due solely to paralysis, is hardly of the severe character, if due to sepsis lacks the attack-like recurrence. Twelve hours' close observation will show a more or less distinct difference in the pulse, possibly in the temperature. The general condition, if sepsis is absent, is not changed, the anxious expression is lacking. In these cases which start earlier, on the third or fourth day or sooner, close observation may lead to a proper diagnosis, but it is clear that inasmuch as both conditions may be present at the same time, no strict rules for diagnosis are possible; from personal experience I can say that now is the hardest and most responsible moment in the post-operative treatment of our patients.

Of course, we have all seen cases of obstruction due to firm adhesions, bands which tightly constrict loops of intestine oc-

curing weeks, months and even years after the primary operation. These, however, do not come within the scope of this discussion.

Recognized intestinal obstruction, if enemata, high or low, lavage of the stomach, change of position and slight abdominal massage have been of no avail, can, of course, be relieved only by reopening the abdomen and loosening the constricted part. This may at times be an easy matter, at others extremely difficult on account of the lack of room due to the enormously distended bowels, which may make it advisable to puncture them in different places before attempting to find the offending cause. Naturally conditions have to be dealt with according to their appearance. Intestinal resection with or without immediate anastomosis, anus *præternaturalis* are possibilities. The condition is a grave one, and the sooner it is recognized the better the prognosis.

Next to prompt and proper action when once the condition has arisen, prophylaxis is of great importance. While it is beyond our power to prevent the formation of peritoneal adhesions after operations, it is possible by the employment of proper technique to reduce the chances of their formation to a minimum in the vast majority of cases. Prolonged exposure to air, extensive handling of viscera and the employment of dry abdominal pads are apt to result in lesions to the endothelial lining of the peritoneum; therefore, the shortest possible exposure, Trendelenberg position and the employment of moist pads are advisable. The covering of ligated stumps, pedicles and raw surfaces with peritoneum is of the utmost importance and should always be attempted. Before closing the abdominal incision it is imperative that the patient be placed in the horizontal position in order to detect a possible displacement of a loop of intestine, through some opening in the omentum.

And now a few words as to the after treatment, especially as to the management of the bowels. In my opinion it is immaterial when and how the bowels are moved; in the majority of cases adhesions cannot be prevented in this way, nor septic infection aborted. In spite of what has been said and written on this subject I am to-day a firm believer in the temporary use of opiates in cases of paralytic ileus as well as septic peritonitis.

To the strict adherence of these rules, to the conservative attitude I have always taken in cases of acute inflammation, and to the rare employment of drainage I attribute my good fortune in not being able to report a case of my own.

SHOCK AND HEMORRHAGE AS CAUSES OF DEATH FOLLOWING ABDOMINAL OPERATIONS.

DR. CHARLES CLIFFORD BARROWS.—There are perhaps no conditions complicating abdominal operations or following immediately upon their performance of more absorbing interest to the surgeon than those of shock and hemorrhage. The symptoms

arising from these two conditions are at times so closely allied and the results dependent upon them so nearly similar that it seems entirely correct to discuss these two causes of death after laparotomy under the same head.

When a patient dies during an abdominal operation, or within, say twenty-four hours thereafter, the death is practically always due to one or the other of these causes.

During the past five years there have occurred in the Second Gynecological Division of Bellevue Hospital, twenty-five deaths from all causes following abdominal operations. Of this twenty-five, four have been attributed to shock and one to secondary shock, dependent upon hemorrhage. So that twenty per cent. of the fatal cases on this service have been due to these two causes. When one reviews the literature of surgical shock he cannot fail to be impressed by the unanimity of opinion which exists among practically all writers to-day as to the causes and diagnosis and treatment of this condition. And if we leave out the problem of treatment, the opinions expressed to-day are fundamentally the same that were taught us as medical students. The facts are so positive and clear that the surgical mind seems to have become crystallized on this subject. In no form of surgical procedure, excepting possibly brain surgery, do shock and hemorrhage prove so potent a factor in producing a possibly fatal result as in surgical operations within the peritoneal cavity, and the reasons are patent to all of us. Surgical shock has been described as a peculiar state or reflex depression of the vital functions, especially the circulation. Its onset is usually sudden, and results from severe irritation of the peripheral ends of the sensory and sympathetic nerves following an injury. It requires but little thought then for one to realize how apt injury of these nerves so abundantly supplied to the peritoneum is to be followed by this most serious complication.

In shock we have a diminution or paralysis of the vascular tone, particularly in the arteries, and with this a coincident weakness of the heart's action resulting in a disturbance of the circulatory balance from the unequal distribution of the blood. There is vasomotor paralysis, dilatation of the venous system, especially the large venous trunks of the abdomen and corresponding lessening of the quantity of blood in the arteries. The right heart becomes unduly dilated, the lungs and brain anemic in consequence, and unless the equilibrium of the circulation is restored, the heart ceases to beat, and the patient's life is sacrificed. The primary cause of shock is traumatism and in the prolongation and repetition of traumatism lies a potent factor for the fatal termination of one's work. In no sort of surgical work does the question of time bear a more important relation to freedom from shock than in operations within the abdominal cavity.

The predisposing causes of shock are those conditions which tend to lower the vitality and general power of resistance of the patient. Previous prolonged illness or loss of blood, high tem-

perature, general septic conditions of even the mildest type, impairment of the functional activity of the heart, lungs or kidneys, all may prove serious predisposing factors in the development of shock. Prolonged anesthesia and undue handling of the abdominal contents; traction on the pedicle of a tumor or forcible displacement of any of the intraperitoneal organs frequently aid in the development of shock.

The symptoms of shock are those of general depression; the pulse is rapid and feeble, the temperature of the body is lowered; the respiration becomes shallow and irregular and the functional activity of all the organs of the body is retarded. Muscular tone is diminished, and the sphincters may fail to act, causing involuntary evacuations and vomiting frequently occurs. In fatal cases the heart's action becomes more and more feeble; the pulse more rapid and thready in character; the extremities cold and a combination of cardiac and respiratory failure ends in death.

The diagnosis of shock depends upon a recognition and proper interpretation of this group of symptoms and is not, as a rule, a difficult problem, but its differentiation from the condition dependent upon hemorrhage after laparotomy is of great importance. For it may readily be seen that symptoms pointing toward one of these conditions may develop after the abdominal wound has been closed and it becomes necessary to decide promptly and positively whether the condition be due to shock or hemorrhage, since, if the latter be the cause of the condition present, it may become advisable to reopen the abdomen and search for the source of the hemorrhage—a very grave procedure and one frequently in itself followed by fatal results. So that the differential diagnosis between shock and hemorrhage after laparotomy becomes one deserving our most serious consideration, and in many cases it is by no means a simple proposition; since in both we have rapid and feeble heart action, shallow and irregular respiration, dilatation of the pupils, coldness of surface and lowered body temperature, impairment of general muscular tone and possibly vomiting and disturbances of the mental faculties.

In hemorrhage, as a rule, the patient regains consciousness promptly from the anesthetic, is extremely restless, with a panting respiration from oxygen starvation; great thirst and fear of impending danger. On the other hand, in shock the patient gradually, sometimes rapidly, lapses into a semi-comatose condition, or into coma without restlessness or expressions of much bodily discomfort; the respirations are, as a rule, shallow and not so rapid as in hemorrhage.

Where the symptoms are of such gravity as to give us serious anxiety, we should at once resort to the use of the hemoglobinometer, which by demonstrating the decided impairment of the ratio of the red coloring matter, will lead us clearly to a diagnosis of hemorrhage.

The treatment of shock following laparotomy may be divided

into prophylactic treatment and immediate treatment. The securing of the best possible bodily condition of the patient before subjecting her to an abdominal operation; quietude of mind as nearly as it can be secured; the healthy establishment of all the bodily functions, so far as it is possible; the choice of the time of day when the vitality is at its best—all these have an important bearing on the subject. In cases of poor vitality where I have feared the supervention of shock during the course of a laparotomy, I am satisfied that I have derived great benefit to my patients from a suggestion made to me by Dr. Goffe several years ago; that is the intravenous injection of a normal saline solution prior to the beginning of the operation, in this way anticipating a condition which might arise. I have resorted to this procedure in several cases with much satisfaction.

When we come to the question of operation itself, an enormous amount depends upon the skill, deftness, promptness, accuracy and rapidity of action of the surgeon. In no field of surgery does dexterity and speed when combined with absolute thoroughness tell so well as in abdominal operations. Hasty and careless work may, because of unnecessary traumatism, be the very cause of shock, but dexterous and skillful work rapidly and safely done, by limiting the time of operation and thus cutting down the period of anesthesia, will surely be a valuable adjunct in reducing the possibilities of shock in abdominal operations. I believe that the use of a properly fitting rubber glove in all intraabdominal work proves of great advantage in lessening the possibilities of shock. When moistened with hot saline solution the hand thus gloved can be carried about the abdominal cavity with far less danger to its contents, covered by the peritoneum than the most delicate and sensitive of all membranes, than the naked hand roughened by frequent scrubbing and other attempts at sterilization. No surgeon should needlessly manipulate organs which are not involved, but when this becomes necessary it can, I believe, be done with much less danger of shock by the gloved than the naked hand.

We are all, alas, too familiar with the routine treatment of shock as it is followed to-day. The lowering of the head, the securing freedom of respiration, the inhalation of oxygen, the application of heat to the body and extremities, and the administration of morphia and general stimulants go to make a picture clear to us from our earliest hospital days.

The two forms of stimulation that we have come to rely upon most in the service to which I am attached are strychnia hypodermically and the introduction, as promptly as possible, of hot salines into the circulation. From one to two thousand cubic centimeters of normal salt solution at a temperature of 110 degrees F. are introduced into the median basilic vein, followed by the same quantity by high enema and another thousand c.c. by hypodermoclysis. The saline introduced into the vein usually brings about a prompt reaction, which is continued and sustained by that

administered by enema and hypodermoclysis. Strychnia we give hypodermically in doses of 1-30 gr. every two or three hours. This with the routine treatment outlined above forms the basis of procedure employed by most surgeons in shock following laparotomy.

Personally, I believe that I have seen very beneficial results from the intravenous injection of a 1 to 25,000 solution of adrenalin chloride in quantities of 500 c.c., repeated in one hour. I have tried this drug hypodermically but with much less evidence of success.

The time limit imposed upon me will not permit of a very extended discussion of hemorrhage. I think we may accept as a self-evident proposition the statement that the death from hemorrhage after laparotomy should not occur. The imperfect ligation of vessels or pedicle, the slipping of ligatures, the retraction of vessels from the ligated pedicle, such causes of hemorrhage may be dismissed as not being liable to occur in the practice of gentlemen of this Society—these accidents being due to bad surgery. But there is a condition where hemorrhage of sufficient gravity to cause death may exist without discredit to the surgeon; that is where it has become necessary to make extensive separation of adhesions, leaving denuded surface of much extent so as to furnish hemorrhage sufficient to threaten life. Prolongation of the time in which the patient occupies the Trendelenberg position seems to favor the production of this form of hemorrhage after the body has been restored to the horizontal position.

Restlessness of the patient; a weak, rapid, small pulse, rapid, shallow respiration, indicative of oxygen starvation, great pallor, cold clammy skin, great thirst, distention of the abdomen, and if there be drainage, the free escape of blood will usually make clear to us the occurrence of hemorrhage of sufficient gravity to warrant interference. Satisfied on this point, we reopen the abdomen and mechanically control the bleeding points. The general plan of treatment already advised for combating shock will serve us also in hemorrhage.

SOME UNUSUAL CAUSES OF DEATH FOLLOWING ABDOMINAL OPERATIONS.

DR. G. H. MALLET.—In looking over the mortality of a series of eighteen hundred laparotomies the causes of death other than those of infections, ileus, shock and hemorrhage are found to be quite numerous, but many of them are so rare that they deserve but a passing notice.

In the early days of abdominal surgery, it was not uncommon to leave foreign bodies, such as towels, sponges, instruments, and even a seal ring has been left in the abdominal cavity to be recovered at a subsequent operation, or at the autopsy. Fortunately of late years, owing to the extraordinary precautions taken, such accidents are rare.

Of the pneumonias following operations, the so-called non-septic class add little to the mortality of the laparotomist. It arises from the irritating effects of the anesthesia, from exposure of the body during operation, or from inhalation of foreign matter. The septic variety arises from the lodgment of septic emboli from an infected focus. The so-called non-septic pneumonia has occurred seven times in Dr. Kelly's recorded seventeen hundred laparotomies. Six times the anesthetic used was ether, chloroform once. The prognosis of a pneumonia resulting from an anesthetic is favorable. It usually begins with a bronchitis and runs a typical course. Most of the cases that have come under my observation have had a bronchitis before taking the anesthetic.

Nephritis.—In every hospital with which I have been connected, it has been the custom to examine, more or less carefully, the urine of every patient, and a record kept from their admission to the time of their discharge. In cases where no evidence of kidney disease was discovered, I cannot recall a single case that died of acute nephritis after laparotomy, nor one that died of uremia.

In those in whom the kidney lesion was discovered, measures were taken to put the urinary organs in the best possible condition both before and after operations, and how few have died after operations when the kidneys alone showed evidence of disease.

In hospital statistics deaths are quite frequently attributed to nephritis when the diagnosis cannot be verified, and if disease of the kidney is found on autopsy, in many cases it has contributed to death only secondarily by reducing the resisting power of the tissues to the invasion of infecting bacteria.

Suppression of urine after abdominal operations is due to ligation of one or both ureters or to an acute exacerbation of a pre-existing nephritis. This can be determined in some cases by an examination of the urine or by the presence of symptoms of hydronephrosis, in other cases the diagnosis is made on autopsy. Ureters have been ligated by some of our most experienced surgeons, and both ureters have been tied by operators who were not novices, the cause of death having been discovered in the dead house.

In discussing unusual cases of death should be mentioned two cases of tetanus following aseptic celiotomies, reported by Dr. Coe, to the American Gynecological Society, in 1901. Those occurred in his own service with an interval of eighteen months. The first patient was operated upon for double pyosalpinx, and the operation consisted of curettement and the removal of both pus tubes intact with the diseased ovaries. No irrigation or drainage was used. Catgut ligatures and strict aseptic precautions were employed. No pus had been in the operation room for several days. Nothing unusual was noted about atmospheric or telluric conditions. The convalescence was afebrile. No symp-

toms of tetanus occurred until the sixteenth day, when the patient had been well enough to lie upon a lounge. The stiffness of the jaw and usual symptoms of the disease progressed slowly until the eighteenth day of this complication, when frequent attacks of general convulsions with marked episthotonus set in, and she died of exhaustion on the thirty-sixth day after operation, and the twentieth after the initial symptom of tetanus.

The other case occurred in the same hospital eighteen months later. The operation was for fibroid of uterus and ovarian cyst. Total extirpation of the uterus was performed in the usual manner. The operator was assisted by Dr. Jarman. Dr. Jarman immediately followed with a similar operation in which he was assisted by Dr. Coe. The other condition being identical with the former case, this patient made a perfect recovery. Dr. Coe's case made a normal convalescence until the ninth day, when stiffness of the jaw was noticed. The symptoms progressed rapidly, and notwithstanding that everything possible was done for her relief, she died on the eleventh day. These are the only cases of tetanus which have ever occurred in the General Memorial Hospital, and the mode of their introduction there is food for speculation. H. A. Kelly has noticed that three cases of death resulting from hemorrhage into the intestine after abdominal sections produced by intestinal ulcers.

In 1886 Dr. James Hunter reported a death following an abdominal operation where the autopsy showed the cause of death to be due to acute dilatation of the stomach.

In a series of cases that I have reviewed, apoplexy is assigned as the cause of death in two instances.

The most important of the so-called unusual cases of death following abdominal operations, is what Byron Robinson in a recent paper on "Sudden Death" calls the "uncontrollable embolus"; most sudden deaths arise from embolus. According to Robinson, embolus causes death (a) by anemia of vital centers (in the floor of the fourth ventricle), (b) by asphyxia, mechanical (in the pulmonary artery), (c) by infection, sepsis, (d) by destruction of parenchyma infarcts, devitalizing the maximum power of the organs. An embolus in general is broken up from the local thrombus through trauma, extra bodily activity or liquefaction of the thrombus. The chill following is the result of infectious distribution.

In the record of eighteen hundred laparotomies that I examined, death occurred in six cases from embolism. In but two of these was an autopsy permitted. In all the symptoms were such as to warrant a diagnosis. In three of the six cases the operation was performed for fibroma of the uterus, in one sarcoma of uterus, in one carcinoma of the ovaries, and the remaining case cystic degeneration of the ovaries. In all of these cases death occurred suddenly. The fatal terminations in one case, which was an exploratory laparotomy performed upon a patient having a

large fibromyoma, in twenty-eight hours after operation, in another forty-eight hours (fibroid), another case also fibroid, in four days; the case of carcinoma of the ovaries died on the third day; the sarcoma of uterus on the ninth day, and the cystic degeneration of ovaries on the tenth day.

In none of these cases was there any evidence of femoral thrombosis or phlebitis. Of the seven fatal cases of pulmonary embolism following abdominal sections reported by Wyder, and quoted by Dr. Coe in his paper on "Crural Thrombosis Following Aseptic Celiotomy"; in only one was pain felt along the course of the vein in the leg before the symptoms of dyspnea appeared, and in only one case was there more than one attack of dyspnea.

Kelly relates a typical case of sudden death due to pulmonary embolism when the symptoms pointed directly to previous femoral thrombosis, and also relates one case when several attacks of dyspnea preceded the fatal termination.

Pulmonary embolism is so intimately associated with femoral thrombosis that any light thrown on the etiology of this condition should be of value.

Dr. J. C. Clark (University of Pennsylvania Medical Bulletin, July, 1902), from an analysis of forty-one cases of femoral thrombosis, comes to the conclusion that this condition may follow a very simple abdominal operation almost as frequently as a grave one. In fact, the gravity of the operation, the amount of shock attending it or the condition of the patient before its performance does not have any apparent bearing as a predisposing influence in the production of this post-operative sequel. This thrombosis is not of infectious origin, neither is it due to traumatism of femoral or iliac vessels, but to a direct continuance of a propagating thrombosis arising in the deep epigastric veins which grows slowly downward until the femoral or iliac vein is reached, and then gives rise to a mural or partially obstructing femoral thrombosis with its attendant train of symptoms.

Three chief theories have been offered in explanation of the formation of thrombosis: (1) Alteration in blood; (2) Mechanical disturbance in circulation; (3) Lesions of the vascular walls. Dr. Clark believes the latter two explanations or the co-operation of them both to be correct.

Van Recklinghausen's theory of the mechanical disturbance of circulation Clark believes to be the best. Van Recklinghausen claims that it is not so much a slowing or irregularity of the blood current that leads to thrombosis, but that it is more directly produced by a whirlpool or eddying movement set into action by one blood current being injected into another at right angles or against the current. It is a physiological fact that the condition of the endothelial lining of the vascular channel is of prime importance in maintaining the fluid state of the blood and lesions or traumatism to the endothelium may, therefore, lead to throm-

bosis either by destroying the smooth non-adhesive surface of the endothelium or by producing necrosis of the endothelial cells—the deep epigastric veins enter the external iliac veins at a right or obtuse angle against the current and thus favors the formation of a thrombosis.

Can anything be done to prevent post-operative death from embolus? One may be forewarned by an accurate diagnosis of any pathological lesion in heart, artery or vein, and an ample time for preparation taken. Byron Robinson thinks that those deaths would occur less frequently if the patient were given anatomical and physical rest for from forty-eight to seventy-two hours before operation; and that visceral drainage more thoroughly induced by means of water and the intestinal tract thoroughly evacuated by about a half a dozen movements. He suggests that eight ounces of half physiological salt solution be drunk every two hours, six times daily, before the intended operation.

DR. EDWIN B. CRAGIN.—It seems to me that the causes of death are perhaps best understood by considering the improvements in technique which during the last ten years have lowered the mortality. The first thing that impresses me is the improvement in the method of administering the anesthetic. Formerly it was the custom to have a junior in the hospital, without any previous experience, give the anesthetic and nearly drown the patients; while to-day we have a skilled man administer it. Another thing which impresses me as overcoming a cause of death is the omission of drainage. I think that all of us who have used glass drainage tubes, and gauze drains through the abdominal wound, and compared the results obtained then with those obtained to-day without drainage, cannot but be impressed with the fact that the drains were the cause of death in many cases. Another thing which impresses me is the care that all take now to cover raw surfaces with peritoneum. We must look upon the leaving of raw surfaces as a cause of increased morbidity, if not mortality, from absorption of pus or fluids in the abdomen, from adhesions forming intestinal obstruction, etc. Now we know that these raw surfaces should be covered if possible.

I must confess I have not the same fear that Dr. Polk has of the vagina not being sterile. We can look upon the vagina, unless recently exposed to the source of infection, as being comparatively sterile. We must also bear in mind the possibility of removing some of the germicidal and protective power of the vagina by the thorough scrubbing to which it is sometimes subjected. In other words, we must be careful not to remove Nature's own protection, which is her inheritance.

DR. WILLIAM S. STONE.—There are one or two points in Dr. Mallett's paper regarding some of the unusual causes of death that I would like to refer to, especially that which he said as to the possibility of doing something to prevent such accidents as em-

bolism. It has occurred to me that it is of considerable practical importance in a certain class of cases that we should do that which is so often overlooked. It is now generally recognized how frequently in the presence of fibroid tumors, for example, there is present many degenerative changes in various organs, as the kidneys, the liver, the myocardium and in the intima of the blood-vessels. While these degenerative processes are present, particularly in the heart, they are not necessarily contraindications to operative procedures because of the direct causal relation between these tumors and the degenerations. It seems to me that possibly in this particular class of cases we are not apt to observe them closely enough and perhaps prepare them properly for operation by rest in bed and various hygienic and dietetic methods.

With regard to the diagnosis there is one prodromal symptom, the so-called Mahler's symptoms, which is found to be present in a certain percentage of these cases, *i.e.*, an increased rate of pulse without apparent reason.

DR. J. MILTON MABBOTT.—It has been demonstrated, in obstetric practice at least, that the vagina is usually sterile, and that the normal vaginal secretion is antiseptic, the gonococcus being the only microbe commonly encountered which is capable of withstanding its germicidal action. After labor the lochial discharge affords no such protection, but naturally remains sterile unless contaminated from without.

As I recall it, Williams has expressed the unqualified opinion that puerperal sepsis is always introduced from without by an attendant. I am inclined to agree with him with the exception that I do not believe that the attendants are always responsible. I believe the infection is sometimes caused by access of air to the vagina, due to a gaping condition of the vulva, the presence of microbes in the air explaining subsequent sepsis.

So far as the vagina is concerned, I did not mean to imply in my very general remarks that any rigorous measures should be resorted to to make it sterile. I believe that in the cases we see in the hospital it is impossible to render the vagina sterile. The kind of vaginas we deal with in our gynecological work points to this statement. It is evident that you should leave a normal resistance in the tissues themselves if one expects them to maintain normal resistance to infection, and this would not be the case here if very rigorous measures were adopted to render the vagina sterile.

This drainage through the vagina is one cause of subsequent infection, and further there is an unavoidable exposure of the gauze to the atmosphere during its introduction, and so the meshes of the gauze carry the microbes which are responsible for the sepsis. Therefore, I am surprised that in these days, when so much has been said regarding cleanliness, that so little is said regarding antiseptics. I believe we can secure asepsis more certainly by a rational use of antiseptics. I do not mean to say that

I draw any inferences regarding the possibility of a sound membrane taking care of a certain number of microbes. But I believe I now make more use of antiseptics than seems to have been done in recent years.

DR. L. GRANT BALDWIN.—A point frequently overlooked or not observed in many of our hospitals is the frequent handling of instruments, etc., by assistants in attendance upon operations. I believe it is a very important part of our technique to cut down the number of people assisting to a minimum and make the operation as simple as possible. I should also like to emphasize the matter of anesthesia; in my experience the anesthesia causes more deaths than any other one thing.

TRANSACTIONS OF THE CHICAGO GYNECOLOGICAL SOCIETY.

Meeting of January 20, 1905.

The President, J. CLARENCE WEBSTER, M.D., in the Chair.

Dr. ROBERT DODDS reported

A CASE OF RUPTURE OF TUBAL PREGNANCY DURING EXAMINATION.

Mrs. H., aged 27 years; married seven years; one child $3\frac{1}{2}$ years old; no miscarriages; menstruated regularly since twelve years of age; no previous illness except measles and mumps in childhood. Present illness—September 1, 1903, ceased menstruating regularly, then menstruated without cessation from 15th of same month till November 8. There was some vomiting and slight pain; no shock or necessity for going to bed during this period.

November 12 I saw her for the first time, and found tumor posterior to the uterus, nearly filling the pelvis, but not appearing above the brim; it was surrounded by numerous adhesive bands, crossing and recrossing one another; made diagnosis of extra-uterine pregnancy and advised operation at once, which was refused. I saw her daily for a week, expecting rupture at any time. I then informed the family I could not be longer responsible, and told them to call in other counsel. I was then told that if they needed me in the case again they would let me know. Another doctor was called and took care of her until December 8, when he surrendered the case, and I was called in again. The tumor now extended above the umbilicus on the right side. There was considerable exhaustion and pain. Patient was taken to hospital at once, and on December 9 I prepared to operate. While she was under the anesthetic I examined the tumor and decided it was cystic and perfectly movable. After my assistant had prepared the field he palpated the tumor, and while doing so it disappeared.

There seemed to be some question as to the diagnosis, and the patient was permitted to come out of the anesthetic until signs of shock and hemorrhage appeared. When the abdomen was opened it was full of blood, and a large fetus immediately floated to the surface. It was a right tubal pregnancy, and ruptured while we made examination. The placenta was removed with much difficulty, on account of the adhesions and large quantity of blood clots in the abdominal cavity. I gave it a thorough irrigation with hot normal salt solution. Left drainage in for twenty-four hours.

Recovery was rapid, patient leaving hospital in eighteen days. The age of the fetus, both from size and history, was about three months.

TUBAL ABORTION, WITH SPECIMEN.

Dr. CHARLES E. PADDOCK.—On December 15, 1904, I was called to see Mrs. S., aged 30, a widow for eight months. For the past month there had been a continuous discharge of blood from the uterus, more or less in amount, and occasional colics low down in the right side of the pelvis. She had menstruated regularly, except during the past eight months. In March, 1904, she missed one period, the amenorrhea lasting about eight weeks. During her nine years of married life she remained sterile. The uterus was found in retroversion and somewhat enlarged. Palpation of the right pelvis was unsatisfactory, owing to extreme rigidity and tenderness. The possibility of pregnancy was emphatically denied by the patient. An examination was made under nitrous oxide gas, followed by a curettement. At no time, however, was she completely relaxed, and examination of the right pelvis was not satisfactory. The cervix was soft and easily dilated. The uterine canal was about eight centimeters in length. The endometrium appeared normal, except in one place, where some scrapings were removed. These scrapings being considered of sufficient cause for the hemorrhage, no further examination was attempted. They showed large and small decidual cells.

The hemorrhage continued and the colics became more and more severe. A week later, at another examination made by Dr. Besley and myself, a fluctuating mass was felt, this mass having occurred since the last examination. It seemed to fill up the right pelvis, pointing into the cul de sac.

An abdominal section was made, and the pelvis found full of dark fluid and clotted blood. The tube was apparently free from adhesions and considerably enlarged. In the lumen of the fimbria was located an oval mass, three centimeters in length and one and one-half in thickness, which was considered to be the detached ovum, and upon which the hasty diagnosis of tubal abortion was made.

This mass, upon section and microscopical examination, proved to be a blood clot. The tube was considerably enlarged, appar-

ently large enough to admit the passage of this mass. In the center of the tube the lumen was occluded by another mass, which contained a large number of decidual cells. Sections taken from different parts of the tube wall and from the mass in the center showed decidual cells in abundance. In this central mass were found villi. Until these villi were found, a positive diagnosis of pregnancy was not possible. Neither was it possible to make a diagnosis of pregnancy from the changes in the cells of the gland. Any stimulus of the uterine mucosa or tubal mucosa may produce decidual cells, and also give the cylindrical cells of the glands the characteristic flattened shape of pregnancy.

The mass in the lumen of the fimbria, while not containing any fetal tissue, I believe to be a blood mole. Just how recent this conception occurred in this case it is impossible to say. The decidual cells incident to pregnancy may be found a year or two, or even more, after determination of the pregnancy.

Dr. CHARLES S. BACON.—The diagnosis of extrauterine pregnancy early is such an important matter, and sometimes so difficult, that it is always an interesting subject, and I have never been able to agree with those who object to the investigation of the interior of the uterus in doubtful cases. I have two or three times myself, intentionally, carefully got a little of the mucous membrane of the uterus, and have made a diagnosis of extrauterine pregnancy from the presence of typical decidua and the absence of the villi, where the symptoms were not quite convincing, where the possibility of an extrauterine tumor previously existing was present, and where, of course, I hesitated to make a radical operation until the diagnosis was satisfactorily confirmed. I am aware that this procedure is condemned by a good many, but I do not believe that it should be always condemned, for there are cases where it is justifiable. Where one finds in the uterine scrapings typical decidual tissue, I think we can, with the complexus of other symptoms, decide positively on pregnancy.

In regard to the specimen exhibited by Dr. Dodds, I should suppose that a diagnosis of that tumor was possible by finding the heart (fetal) tones. The fetus, as I measured it just now, is about seventeen centimeters long, corresponding to about seventeen weeks of gestation, and, according to recent observations, the fetal heart tones can be heard at the thirteenth, or even twelfth week. I have never heard the fetal heart tones under twenty weeks, but have no doubt it can be done, and it would be desirable in a case of this kind to make a very careful examination for the presence of the heart tones.

Dr. J. CLARENCE WEBSTER.—Dr. Dodds' report is one which should serve as a warning. We do not think, in our routine examination of cases, of the possibility of rupture of tubal pregnancy, and yet it may be possible for any one of us to produce such a rupture in ordinary office work. I reported at the last

meeting a case that I had once in the clinic, where an interne produced a rupture previous to the operation.

Dr. Paddock's specimen is an extremely interesting one, because it calls to mind the famous case in England, which was not one of ectopic pregnancy, but of uterine pregnancy, which ended so disastrously for a well-known obstetrician. The pregnancy occurred in a lady who had been separated from her husband for eighteen months, and the specimen of abortion which resulted was considered by the physician as recent. In medical circles that case attracted a great deal of attention, because it brought up for the first time the question of the retention in the uterus of a pregnancy, and of the changes that occurred in the fetal structures. I had the privilege of examining some of these specimens, and since that case was published I have given a good deal of attention to this subject, and have come to this conclusion: That it is impossible to give with accuracy an opinion regarding the life and the age of retained fetal structures found either in ectopic or uterine pregnancy. Nothing has surprised me more than the variations which we find in the degenerative processes present.

My recent case of ovarian pregnancy brought up some interesting points in this connection. You remember that Thompson of Portland, Maine, who reported the first case of ovarian pregnancy in this country, was not able to find any amnion. In the specimen which I described the amnion was well marked, yet Thompson's specimen was not as much injured by blood extravasation as mine; it was in a better state of preservation, and one might have expected the amnion to be preserved. Yet it is the chorion to which chief attention must be given in such examinations.

I have in my collection at present a specimen of a six months ovum which had been retained in the uterus about twelve months after death of the fetus, and was then expelled spontaneously the day of the examination, which was made under an anesthetic. The case was sent to me as one of fibroid tumor of the uterus. On microscopic examination some of the villi were found to be well formed, not differing greatly from normal fresh specimens, yet the majority were degenerated. There was hyaline change in the connective tissue; the Langhans cells had practically all disappeared, and there were great variations in the condition of the syncytium. But, comparing that specimen with a similar one, where the pregnancy was not retained more than three months, I have not been able to make out any differences as regards the chorion, except that in the latter a larger number of slightly degenerated villi were found. The older the specimen the more decolorized the blood and the denser the fibrin surrounding the villi. If, therefore, we find in a specimen, either uterine or extrauterine, widespread, advanced blood changes of this nature, we may, I think, safely say that the ovum was not very recently alive. I have seen one specimen of Dr.

Paddock's case under the microscope which shows beautifully the attachment of villi to the mucosa of the tube, and the mucosa shows very well a marked decidual transformation, but the villi that I have seen certainly do not show very much degeneration. The characteristic mucoid structure of the connective tissue is well shown, as is also the epithelial covering.



Hypospadias and Cryptorchidism.

Before anything can be stated regarding the age of this specimen, a careful examination of the whole section of the abortion or mole should be made. In such a case as this one might at first make a statement which would reflect on the character of the patient concerned, and it would need a very thorough examination before anything definite could be stated, and even then

I do not think we would be justified in making any positive statements as to the age of the ovum.

Dr. PADDOCK.—I was in hope that someone would enlighten us a little in regard to the presence of decidual cells as bearing upon the diagnosis of pregnancy. Dr. Bacon has stated that he has in a number of cases made a diagnosis of extrauterine or uterine pregnancy from the presence of decidual cells. I think, if Dr. Bacon attempts to make a diagnosis of pregnancy, especially extrauterine, from the presence of decidual cells, he will find in some cases that he will be very much mistaken. I have no less an authority than a work published recently in Berlin by Dr. Abel (*Gynecological Pathology*), which states positively that a diagnosis of pregnancy cannot be made from the finding of decidual cells, and, furthermore, states that there can be a stimulus to the uterus from other causes which will produce like changes in these cells, as well as in the cells lining the glands themselves.

I had also hoped that someone would enlighten us with regard to the mass which was found in the fimbriated end, and whether a mole could be formed in so short a time and become organized as this was, and whether I had really a tubal abortion to deal with in this instance.

HYPOSPADIAS AND CRYPTORCHIDISM.

Dr. RUDOLPH W. HOLMES.—I wish to present a photograph of a so-called pseudo-hermaphrodite, which is in reality a case of hypospadias and cryptorchidism. The baby was born two months ago in the service of the Northwest Station of the Chicago Lying-In Hospital. The picture was taken when the infant was about two weeks old. With the thighs held closely together, the diminutive penis resembles an hypertrophied clitoris; the two halves of the scrotum, without their testes, look like the labia of the newly born girl, due to a failure of development of the median raphé; in fact, there is a depression in the median raphé, excreting a small amount of serous fluid, which simulates a rudimentary vagina. As the infant is a Jewish boy, the Mohel was at a loss in attempting to carry out the rites of the Hebraic religion.

A DICEPHALIC MONSTER.

The second specimen is particularly of historic interest, as it is a relic of the Chicago Fire. The mother of this monster was delivered by the late Dr. John King, Professor of Medicine in Trinity College, Toronto, about sixty years ago. The specimen fell into the possession of his son-in-law, Dr. William Winer, who was one of our well-known physicians in the sixties and seventies. As the fire approached Dr. Winer's home the jar of alcohol containing the baby was placed in the tub under the pump of St. Vincent's Orphan Asylum, then situated at the corner of State

street and Chicago avenue. Some time after the fire a relative of Dr. Winer found some boys kicking the monster about the street, took possession of it, and returned it to the owner. Dr. John K. Winer was persuaded by me to present the specimen to Rush College.



Dicephalic Monster.

The baby has suffered from its knocks about the world, and attempts to play the phoenix, as is evidenced by the mutilated head, absence of its third leg and arm.

The monster is an example of a dicephalic, tribrachius, tripus monster. The third arm springs from the back, while the third leg is attached to the sacrum.

Dr. ALLEN B. KANAVEL read a paper (by invitation) entitled
UNCOMPLICATED VARICOSE VEINS OF THE FEMALE PELVIS.*

Dr. FRANKLIN H. MARTIN.—I feel my inability to discuss this paper adequately and to take the responsibility of discussing it alone. I expected to have had the assistance of Dr. Ries and Dr. Webster. Dr. Webster, in a conversation I had with him, stated that this subject was one of great importance, and one in which he was much interested. There is difficulty in discussing the subject, because of the newness of it, and the fact that very little has been written upon it. Up to this time we have been accumulating very slowly the facts, and after Palmer Dudley's paper, in 1888, and the slight ridicule it met with because of his position that the condition was analogous to varicocele in the male, it was difficult for any one who was not vitally interested to take up the subject. However, in the meantime facts have slowly accumulated, and I think we owe a great deal to the essayist for collecting those facts in the masterly manner he has, and presenting them as he has, and drawing very judicial conclusions from them. Since my attention was called to this condition by Dr. Kanavel at an operation during which he assisted me, I have seen quite a number of these cases, comparatively speaking, and I think any abdominal surgeon will, after hearing this paper, if he has not had his attention called to this condition before, immediately cast about, and in his mind's eye will recall a number of such cases, either complicating fibroids or otherwise. In a fibroid case very frequently a bunch of grape-like veins will be seen draped beneath the ovary, and at the same time large veins passing through the base of the broad ligaments. The condition will be seen frequently in cases of retroversion, in cases of prolapse, where there has been more or less mechanical interference with the return flow, and, in short, in more cases than we would believe until the matter has been looked into carefully.

I am going to report a case of considerable interest bearing on this subject, and one which illustrates, I believe, the rupture of varicose veins.

There is one point on which I would like to speak, and that is, one of the symptoms which I believe may be characteristic of this condition is complained of by a great many women, namely, her inability to stand without pressure and pain in the pelvis. The woman will tell you that she can walk, move about, can assume any sitting position, and work, but standing is extremely painful and causes pressure in the pelvis. That may be accounted for by the distention of the veins and the fact that the pressure cannot be relieved by the movements of the muscles in the pelvis, which would tend to transmit the blood on through the enlarged veins. I have inquired into the case I am going to report presently with reference to that symptom, and it has been brought out very strongly.

* See original article, page 480.

In 1901 I operated on a young married woman who had not borne children and who had not miscarried, for symptoms caused by a well-defined tumor in her left side. A number of adhesions were found, covering a retroverted uterus, and a hematoma of the left broad ligament containing about six ounces of thick blood was evacuated, the superabundance of peritoneum incised, and ligatures placed on the uterus and pelvic side of the cavity. A cyst was excised from the right ovary, and the uterus, after freeing it, was suspended.

In 1902 the patient returned, said that she had not been well, that her menstruation had been profuse and irregular, and on examining her I found that she had a well-defined tumor again in the left side. Her symptoms indicated ectopic pregnancy without rupture. She was sent to Dr. Byford, and he confirmed the opinion that she should be operated on, he, too, diagnosing ectopic pregnancy.

The operation revealed another large hematoma of the left side, with no microscopical signs of pregnancy. At this time my attention had already been called to varicose veins of the broad ligament by Dr. Kanavel in one of my own cases, and I was on the lookout for such cases. This case presented well marked varicose veins on both sides of the pelvis, and the hematoma was undoubtedly due to a subperitoneal rupture of one of these veins. The hematoma was evacuated and a ligature placed at the pelvic side, over the infundibulo pelvic ligament, and another at the uterine side, and, as before, the superabundance of broad ligament cut away. Two bunches of veins presented on the right side, one beneath the ovary and tube, the other in the base of the broad ligament, extending from near the cervix to the side of the pelvis. These were each ligated at their uterine and pelvic ends, but not severed.

In October of last year, this woman, who, by the way, seems to be in perfect health following her operation, returned to me for the third time, with a well-marked tumor developed in the left side. It was about four inches in diameter, well defined, with the semi-fluctuating feel of a recently ruptured extrauterine pregnancy. The uterus was crowded to the right side. I suspected a third hematoma, instructed the woman in regard to the difficulty, warned her to notify me on the development of hemorrhagic symptoms, put her at rest, placed elastic tampons in the vagina daily, with an abdominal bandage for counter pressure, in order to exert pressure on the tumor, gave enormous hot water douches twice a day and advised quiet. The tumor gradually but definitely disappeared, so that at the end of a month it could not be palpated. The symptoms during the time this hematoma was present were pressure, bearing down pains, and excessive and irregular menstruation. I believe that it was a third hematoma, developed from varicose veins.

I have seen several cases of varicose veins of the broad ligament complicating retroversions with adhesions, fibroids of the

uterus, and diseased appendages, but can remember but one which might be called a primary case. This one, the mother of two or three children, was brought to me for menorrhagia and indefinite pelvic pain, with a diagnosis of cystic ovaries. Upon examination under ether, an irregular, not well defined mass could be felt in both broad ligaments. The uterus was enlarged. On opening the abdomen the ovaries were practically normal, and the tubes normal, but blue and enlarged. I was at a loss to account for my findings at examination. On closer inspection, a cluster of varicose veins two and one-half inches in length and two inches broad occupied the top of the broad ligaments on each side, dropped beneath the ovary and tube, seen plainly from its posterior aspect. In the base of each broad ligament were large blue veins, not corrugated. I tied the varicose masses at the uterine and outer ends, on the upper side of the broad ligament, and the uterine end on the lower portion, but did not sever any tissue.

This illustrates a case where the varicose veins could be easily palpated, although I did not interpret aright.

In regard to this case, that woman, as a coincidence, came into my office to-day in great distress, saying that she was sure another tumor had developed, because she had the same symptom presented as in the other three cases, which was peculiar, and described by her as a sensation of deadness. She felt a numbness or coldness in the part, with the extension of pains down her limb. I examined her to-day and found that she has another hematoma, I believe, about the size of an orange, three inches in diameter, which has developed within the last three weeks. I sent her home and advised rest.

DR. ALBERT GOLDSPOHN.—It is very well and fruitful that we should take up this subject for consideration, and it has been done in a very commendable manner in the paper that has been read this evening. If I remember rightly, the statement was made that the first case was pointed out by someone in the seventies. In looking at several text-books for a few minutes this evening, I saw that Pozzi says that Richet and Berlioz, his student, two Frenchmen, describe the condition, the first one in 1854, and the second in 1858.

In regard to the anatomy the essayist spoke of, that is the cause of the more frequent occurrence of varicocele in the male and varicose veins in the broad ligament in women on the left side, I did not hear him say anything about the details of the anatomy accounting for this very well-known general fact. The best anatomy to explain the reason for this predominance of varicosity on the left side in both sexes is that the ovarian or spermatic vein empties into the renal vein at a right angle on the left side, and the blood passed around the right angle, whereas on the right side the respective vein passes almost directly in a straight line upward into the vena cava; therefore the circulation of blood from the left ovarian side is more obstructed than is that in the right vein.

Of the things I have heard mentioned, this is the most plausible one, in my opinion, to account for this phenomenon.

The whole subject of varicose veins in the pelvis of females to me has been a live one for a number of years, and I have always, no matter what operation I did upon the uterus or appendages, which was not a total hysterectomy, aimed at carrying out a technique in such a way as to destroy the veins in the broad ligament to the greatest degree. The essayist has very properly called our attention to the presence of large veins, a very general fact in cases of any pathological condition, that occurs about tumors, about sclerocystic ovaries, and even in cases of ordinary retroversions. He has intimated that a varicose condition of the veins probably causes a sclerocystic condition of the ovary. This undoubtedly is true to a certain extent, but whether the ovary and its attendant condition, irritating the organ, would be the cause of an additional afflux of blood to the parts, and the gradual development of varicose veins, is also to be considered. We know that if any member in the human body is irritated by the presence of a foreign body, as we can say such an ovary is a disturber of health, we get an enlargement of that member, which is not necessarily inflammatory, but simply vascular, and that factor may be easily accounted for in the female pelvis. The observation that the larger varices that have been discovered, diagnosed, or suspected in patients were emptied out, and the symptoms relieved by the patients assuming the recumbent posture, is a very significant one, teaching us a lesson in regard to the treatment of pathological conditions in the female pelvis in general, namely, that the horizontal posture is our best friend for the treatment of most pelvic lesions.

Again, after surgical procedures in the pelvis, after we have removed something, have created a wound internally and inserted sutures to close it, the rational thing is for the patient to be put in the recumbent posture long enough for cicatrization to have thoroughly formed in those parts that have been operated on, and such patients should not be prodded to get up on their feet, to strut about, nor be permitted to do so too early, as such advice is wholly irrational. The rational thing in these cases is to empty out the varicose veins by the recumbent posture. As I have said, it is irrational to permit them to assume the erect posture too early.

I have treated young girls who were suffering from ovarian neuralgias, they were schoolgirls who had barely experienced the first menstruation. Their neuralgias would not stop under the best treatment of medical men, and they were in the hands of good men. I made repeated rectoabdominal examinations in those girls, and discovered large cystic ovaries. In older persons I would have been bold enough to have advised some surgical procedure; but the genital organs of these children, so to speak, are not to be tampered with by topical treatment. It would make matters worse. I have stopped their pains by putting them in the Trendelenburg position, in a hanging position in a bed, with its foot elevated, and

have permitted them to have only a small pillow for the head only. They lie for a month or longer, without receiving medicines, and their pains would cease, followed by permanent good, for a variable length of time.

DR. J. CLARENCE WEBSTER AND E. ROSENOW read papers

ON HAND STERILIZATION WITH SPECIAL REFERENCE TO THE USE
OF OIL OF CLOVES.*

Dr. RUDOLPH W. HOLMES.—If we may accept the implication of Dr. Rosenow as a fact that bichloride of mercury is a less powerful antiseptic than creolin and oil of cloves, then we may feel certain that his findings are substantiation of Lister's opinion, who popularized, if he did not introduce, bichloride of mercury in practice. In many of Lister's writings we read of his endeavors to find a more efficient, more certain, and less dangerous drug than the poisonous sublimate. Bichloride poisoning following the use of gauzes and solutions were not of infrequent occurrence in the eighties; especially was there trouble from the use of sublimate douches in obstetric work of the early antiseptic days. Harrington recently published the results of his experiments with antiseptics. One of his conclusions is that bichloride is an antiseptic which probably in the usual solutions will continue to be the standard in laboratory deductions, but that clinically it is one of the less efficacious antiseptics—this is especially true when it comes in contact with liquid albumens, for the result of such contact is to form a chloride of mercury albumen, which is insoluble. In intrauterine douches, for instance, this new compound is precipitated, forming a coating to the mucosa; later it is absorbed. A sterile water douche following the bichloride douche often is incapable of rinsing out the uterine cavity, therefore, mercurial poisoning results. I feel that bichloride solutions have no place in obstetric therapeutics.

Furthermore, the almost universal custom of surgeons of using bichloride with mere submersion of the hands for a moment or two permits of the precipitation of this compound of albumen-mercuric chloride on the skin, sealing the pores, so to speak. In the course of the operation, manipulations break up the coating, permitting the active germs beneath to escape. Many infections I fear are caused by this insufficient hand washing. Therefore, I have felt for years that it is a mistake to use bichloride solutions unless a stiff brush is briskly used on the hands; mere submersion of the hands is not a method of sterilization.

DR. C. S. BACON.—This report is very interesting, but Dr. Rosenow has not given us any definite conclusions, and I do not suppose he looks upon it as a finished report. At the present time, after the very numerous and elaborate experiments that have been made in many places on hand disinfection, no report can be considered sufficiently satisfactory unless it is made in very much

*See original articles pages 433 and 440.

greater detail than the report we have had to-night. It is necessary for us to know the number of experiments, the number of observations, the thoroughness of them, and the character of the controls. There are so many points concerning the method of making cultures which should be considered. For instance, there is the question as to getting a culture. It is doubtful if the blade used by the essayist is as good as sterilized sand or sterilized threads. Then the character of the controls should be clearly specified. When we consider the final results, we must come to the conclusion that they are discouraging. With definite cultures to work with, with contaminated silk threads, if the germs cannot be destroyed, it is not probable that the agent is, after all, so efficient as the observations on the disinfection of the skin would seem to indicate. I only make these remarks to guard against the possibility that in the report of the proceedings, the society by its silent acquiescence is not committed to the acceptance of a report of this kind. The paper shows a great amount of valuable work, but the report should be considered rather preliminary than final.

DR. ALBERT GOLDSPOHN.—This subject interests me very much, because it is a part of what I have been working at during my spare time for several years, not the sterilization, but the surgical cleanliness of the hands, the preparation of catgut, and the sterilization of infected rooms or apartments.

I have considerable faith in the antiseptic effect of oil of cloves from its use in infected joints, in empyema, and in cystitis. I cannot take time to relate my observations regarding it in detail. When it comes to the series of investigations referred to by the essayist, there are a number of details that are certainly very questionable as to their correctness in bacteriological technique, and sometimes bad mistakes are made, mostly in this country, in bacteriological investigations from errors like the following: That the antiseptic which is used on some object, like the hands, thread, or catgut, is not thoroughly removed from the hands, the thread, or catgut, before the articles are subjected to a culture test. Then, this antiseptic will inhibit the growth of the germs. It is difficult to remove substances like oil of cloves or formalin, for instance, by sterile but non-germicidal agents from catgut or from the skin. Then "no growth" occurs, simply because of the presence of the antiseptic that is carried over in the gut or skin from the antiseptic solution into the culture medium.

But such "non-growth" does not prove that the germs are dead, but merely that their food has been spoiled for them, while they may grow under other conditions. These tests have to be made in a different manner, and what the essayist alluded to of soaking silk thread in a culture fluid, drying it thoroughly, and then proceeding with it, is on the right road. But even the lacerated catgut threads that have possibly some antiseptic in them still, when they are put into the culture medium, are seriously liable to lead to bad mistakes.

The doctor says that he removed the oil of cloves by means of alcohol; that alcohol is the best solvent; but whether six hours of one alcohol bath is sufficient, we do not know. That is a difficult thing to tell, and it is not to be guessed at by any means. Again, in this case, the alcohol used to remove the oil of cloves should in turn be abstracted by water before the gut is placed into the culture medium; and not depend upon the medium to neutralize the alcohol that is present. As we can get out the alcohol also by immersing it in sterile water, that should be done before any culture is attempted. The principle is to remove every antiseptic from the object before attempting to make a culture medium.

In regard to culture tests of bichloride of mercury as an antiseptic, all the bacteriological world knows that we have a much more potent reagent or chemical antidote that is used in all bacteriologic laboratories, namely, sulphide of ammonia, which is not an antiseptic. It is readily soluble in water, and is previously sterilized by boiling. The bichloride is neutralized in the germ carrier by the sulphide of ammonium. And then we can get correct results. It is not at all probable that the bichloride is all removed by the alcohol, as the doctor has attempted to do. But the sulphide of ammonium he should have used. There is great difficulty in making this one step in bacteriological investigations certain, when we are dealing with carbolic acid, lysol, creolin, or antiseptic oils. For bichloride of mercury we have a certain remedy above mentioned, but not for the other chemical antiseptics. For these the custom is to put the object tested into a large culture medium and take it for granted that the antiseptic which remains in it is diluted by the abundance of the supply of food.

DR. ROSENOW (closing).—These experiments were conducted with the utmost precautions as to bacteriological details. The controls were made with great care, and I feel sure that the practical demonstration is beyond dispute. However, I am not ready to state that the results were due alone to the antiseptic action of the oil of cloves.

RUDOLPH W. HOLMES, M.D.,
Editor of the Society.

TRANSACTIONS OF THE SECTION OF GYNECOLOGY, COLLEGE OF PHYSICIANS OF PHILADELPHIA.

Meeting of October 20, 1904.

H. D. BEYEA, M.D., *in the Chair.*

DR. BARTON COOKE HIRST reported

SEVENTY-FOUR CASES OF EXTRAUTERINE PREGNANCY.

These cases illustrated well-known facts in this condition. There was a repeated ectopic gestation, at an interval of five years, a coincident extra and intrauterine pregnancy, an overlooked tubal gestation advanced to four months and operated on a year after fetal death. The large majority of the cases showed tubal abortion, and those in which there was a so-called rupture, on careful examination showed the features of erosion of the tubal wall by the syncytium, and not laceration of the walls of an overdistended tube.

In the cases of tubal abortion, the ovum was imbedded usually in a plication of the tubal mucosa; in cases of erosion or perforation, the implantation of the ovum was found either at the base of the plication or in the isthmus of the tube where the plications lose their prominence. The value of characteristic pain in the diagnosis of ectopic gestation was emphasized.

DR. CHARLES P. NOBLE.—The question of pain I feel also is well worthy of attention in these cases. I was a little surprised, however, by Dr. Hirst's statement that in the text-books so little attention was paid to it. Surely it has been written about, because it is perfectly familiar to one in the journal literature. I have seen a number of cases of unruptured tubal pregnancy, and in those in which I have operated the patients had colicky pains, and a tumor could be felt lateral to the uterus. My experience has not been such as to make me believe that pain is a thoroughly characteristic sign of ectopic pregnancy. I have had an unusually large experience in ectopic pregnancy, the total number of abdominal sections, I fancy, must be nearly 150. I have operated repeatedly when I had not the remotest idea that the patient had ectopic pregnancy. In other words, there was nothing in the history which would lead one to believe that it was an extrauterine pregnancy rather than an inflammatory case. I do not mean that this constitutes a large percentage of the cases, but sufficiently large to make me believe that an extrauterine pregnancy can develop for six weeks or two months, a tubal abortion take place, and the history not suggest the real nature of the case. In a num-

ber of the more serious group of cases the patient will have alarming hemorrhages, and there also the symptom of pain has been misleading. I remember one patient on whom I operated twice for extrauterine pregnancy, first on one side and then on the other, and in this case I remember very distinctly that the patient's pain was all in the epigastrium. She had no symptoms whatever referable to the pelvis. The menstrual period, I think, had been delayed or missed. The patient, in ordinary health, was prostrated with violent pain in the epigastrium. Pelvic examination showed nothing wrong. It was possible to make out the uterus, each ovary, and to feel that there was no mass and no adhesions—nothing at all wrong could be felt in the pelvis. The second time the symptoms were not dissimilar. She was operated upon because there was no other adequate explanation of her physical condition than internal hemorrhage. In both instances there was an ampullar pregnancy—really in the tentacles of the tube, and not in the tube itself—and there was sufficient hemorrhage to markedly prostrate the patient. I think that was as marked a case as I ever saw in which the ordinary signs of ectopic pregnancy were lacking. The next to the last case I have operated on was a doctor's sister, whom I saw when she was moribund. There, too, the symptoms were those of internal hemorrhage, and the question of pain had been a small feature in the case. While I believe, with Dr. Hirst, that pain is a valuable symptom, I am quite sure that it will not lead to a correct diagnosis in all cases.

I have been struck with the irregularity in the number of cases of ectopic pregnancy occurring in the hands of some men. Dr. Parke, who works with me in the Kensington Hospital for Women, has had the experience of one-fifth of his abdominal sections being for ectopic pregnancy. I should think that about eight per cent. of my own abdominal sections have been for ectopic pregnancy.

We are all of us prone to speak about the ruptured tubal pregnancy. For some years I have taken the trouble to examine the cases I have operated upon critically, and insisted that this be done in the pathological examination, to differentiate cases in which there had been tubal rupture from the cases of tubal abortion. The tubal rupture is a rare condition. It is fortunate that this is true, for we get all our fatal cases in tubal ruptures, especially in those near the uterus, and in which the symptoms come on rapidly. In tubal abortions the hemorrhage is slow, and practically all cases recover. I think that, in the interest of exactness, we should differentiate between tubal rupture and tubal abortion.

DR. RICHARD C. NORRIS.—I can add but little to the discussion, except to emphasize upon those who may read our Transactions what I feel incumbent upon all who report ectopic pregnancies, viz., the necessity for careful microscopic study of all these cases. In the earlier teaching following frequent abdominal sections, a

clot adherent to or occupying the tube was always considered an extrauterine pregnancy. In recent years it has been shown that a woman can have an extravasation of blood in the pelvis which is really not an extrauterine pregnancy.

One point brought out by Dr. Hirst was the quality of pain in the case of unruptured tubal pregnancy. A boring pain at the time of rupture has been in my experience very common, although I have seen a woman have a sudden attack of nausea without pain at the time of rupture. In cases of unruptured tubal pregnancy pain of a peculiar character is one of the distinctive features. In these cases we have not the classical features of hemorrhage, shock, or great nausea to assist us and these sharp colicky pains should arouse our suspicion. They constitute a suggestive diagnostic point of tubal pregnancy prior to rupture. My experience has been that of others, that cases are sent to us repeatedly by the general practitioner with the diagnosis already made. Some practitioners, however, are over-zealous in the diagnosis of extrauterine pregnancy as they sometimes are in the diagnosis of appendicitis, but that is rather a good fault.

Dr. Hirst's paper emphasizes two facts which have been more or less in dispute, the presence of pain in unruptured ectopic pregnancy and the antecedent tubal inflammatory conditions. My experience has been similar to his in these respects.

DR. JOHN G. CLARK.—In this clinical review of Dr. Hirst's cases, two points have been brought out which I believe should especially be dwelt upon: First, pain as a characteristic symptom of unruptured tubal pregnancy; second, the frequency of mistakes by general practitioners in assuming that the patient has had a miscarriage instead of a tubal rupture. As Dr. Hirst has said, comparatively little stress has been laid upon the persistent pain before the rupture, over the affected tube.

As our clinical knowledge of extrauterine pregnancy has increased it has, I believe, been the experience of everyone who has seen a considerable number of these cases that he was able to make a very strong tentative diagnosis of extrauterine pregnancy before the rupture, and that the distinctive feature in the history has usually been the persistency of a fixed or paroxysmal pain in the ovarian region.

Within a very short time we have had in the gynecological ward at the University Hospital two cases of this character. Each patient was seen previous to the rupture and the symptoms pointed so strongly to ectopic pregnancy that they were both urged to at once come into the hospital. One patient was kept under observation for a few days and comparatively little could be made out upon pelvic examination further than that she experienced considerable pain upon pressure on this side. There was no abnormal rise of temperature, the pulse was comparatively good, and the patient's general condition moderately satisfactory. Operation was decided upon, on account of the constant fixed

pain with colicky paroxysms, and a very early extrauterine pregnancy in the isthmal portion of the tube was found. The second case had been considered one of appendicitis on account of the paroxysmal pain, but upon her admission to the ward her history was taken carefully and found to be much more that of an extrauterine pregnancy than of appendicitis.

From my own experience, therefore, I quite coincide with Dr. Hirst relative to the persistency of pain in these cases, and also that not sufficient stress has been laid upon this point in the various text-books. The second point which I am certain everyone who has seen a considerable number of these cases has noted is the frequency in mistaking ruptured ectopic pregnancy for a miscarriage. Time and time again patients have been admitted to the wards with the history of a curettage followed by a persistency of bleeding and of pain in one or the other ovarian region. Notwithstanding this history, upon a close analysis of these cases, combined with a bimanual pelvic examination, there could be very slight question as to the diagnosis. I believe a very serious mistake is sometimes made by the general practitioner when he contents himself with a curettage and fails, while the patient is under anesthesia, to fully examine the pelvic organs. In these suspected cases also they would find material assistance in the diagnosis by submitting the curettings to a microscopic examination. The finding of well developed placental tissue quite naturally excludes the diagnosis of extrauterine pregnancy, unless perchance it should be one of the very rare twin pregnancies, the one extra- and the other intra-uterine.

The one chief feature which should be emphasized is the necessity for a full and very accurate analysis of the patient's symptoms.

DR. THEO. A. ERCK.—In my examination of cases I have been impressed with the fact that before rupture the pain is much more acute than in cases of rupture or tubal abortion with the gradual formation of hematocele. While in the former class the pain is agonizing, it is usually less acute in the latter. The case of the largest hemorrhage and greatest shock I ever had was one of the earliest pregnancy in the isthmus of the tube. The whole abdomen was full of blood and the specimen looked as if it could not have been of more than two or three weeks' gestation. It was examined microscopically and proven to be an extrauterine pregnancy.

The question of always being able to make a diagnosis depends to some extent upon the intelligence of the patients; the dispensary patient seldom gives accurate information regarding her menstrual periods. All of us probably have operated repeatedly for pelvic inflammatory conditions and pus tubes when a ruptured tubal pregnancy was present and vice versa.

My experience differs from that of Dr. Hirst, regarding the pathological condition of the appendages. In a series of over thirty cases I have had only two cases showing preexisting patho-

logical conditions in either tube. Two cases were those of recently married young women, both in their first pregnancy, neither case had had previous gynecological treatment, nor infection. Both were proven to be tubal pregnancies, and to a certain extent disprove, or are the exception to the cases that Dr. Hirst quotes when he says that in the majority of them there is preexisting tubal disease. In assisting others in operations for this condition many times, it has been the rare exception to find evidence of preexisting demonstrable lesion in either tube.

DR. H. D. BEYEA.—I would like to ask Dr. Hirst whether he has observed a case of extrauterine pregnancy where the pain and tenderness was over the one side of the abdomen and the lesion in the other side. I have had under my care a case of extrauterine pregnancy in which the demonstrable lesion was on the left side and practically all of the pain and tenderness over the position of the appendix on the right side. At the operation a column of clotted blood was found extending from the lesion on the left, across the abdomen to the region of the appendix on the right. This mass of clotted blood, not extensive, in contact with the tissues about the appendix, caused more pain and tenderness than the tubal pregnancy itself.

Speaking of the failure of diagnosis in extrauterine pregnancy called to my mind a case I saw last spring. The patient had been in a hospital in New England some three months before, the diagnosis of incomplete abortion made and the operation of curettement performed. A few weeks after leaving the hospital she came to Philadelphia to live. When I saw her, at least three months after the curettement, she had a mass in the right lower abdomen the size of a very large grape fruit. She had had two attacks of hemorrhage and syncope, and was in extreme condition. At the operation a fetus of at least four and a half months was removed. The pregnancy must have been at least that of six weeks when the curettement was performed, yet it was overlooked. A number of other cases that have come to me for operation have been overlooked in a similar manner.

DR. HIRST.—I have nothing more to say, except to report one interesting experience that occurred to me when you mentioned the case of overlooked extrauterine pregnancy. In the course of an operation for some pelvic condition the uterus and appendages were carefully inspected and palpated, but nothing was found to be wrong. The woman remained in the hospital about three and a half weeks. She returned home, and about two days afterward the resident was hurriedly summoned to her house on account of a ruptured extrauterine pregnancy. The ovum was about four weeks old, was in the tube when I had it in my fingers, and my palpation may have had something to do with the lodgment of it in the tube.

ORIGIN OF MULTIFOCULAR OVARIAN CYSTS.

DR. JOHN G. CLARK demonstrated several microscopic sections of an ovary which showed glandular structures closely resembling

part of the Wolffian tubular system seen in the embryo. His object in reporting this case was again to allude to the etiology of glandular cysts of the ovary. Many theories have been offered for the origin of these queer pathologic structures, but none have definitely been proved, and this subject is still a more or less obscure one.

It would appear to be a rational conclusion that these cysts must spring from an embryonic structure left in the ovary. According to the theory of ovarian dermoids, they are supposed to arise from the inclusion of misplaced tissue. So far as Dr. Clark has discovered in literature, this theory has never been applied with much plausibility to glandular cysts of the ovary.

In the patient from whom the ovary containing small cystic areas was taken, there was a large multilocular ovarian cyst on the opposite side, which was removed. At the completion of this operation the opposite ovary was inspected, and a cystic transformation was found in the hilus which appeared to be a very early stage of a multilocular ovarian cyst. As the woman had passed the menopause this ovary was removed and careful serial sections made. Here and there small tubular cysts, lined with columnar secreting cells, were found which, upon being traced from one section to another, showed more or less hour-glass like dilatations, and some of them ended in blind extremities which were dilated into small cysts. In all of these there was a mucous secretion, identical with that found in the ordinary multilocular cyst, and the lining corresponded, especially in the cystic cavities, to that seen in the well developed glandular cyst of the opposite ovary. In endeavoring to draw an embryological interpretation of these cystic cavities, a recent research of MacCallum's, of the University of California, was carefully studied to discover whether there was any analogy between the Wolffian system, which he has carefully reconstructed from microscopic sections, and these atypical structures within the ovary. MacCallum, in describing one of the tubules emptying into the Wolffian duct, says that at first it is a straight collecting tube lined by cuboidal cells. After penetrating the Wolffian body this collecting tube suddenly dilates, and becomes extremely tortuous, forming a tubular, glandular appearing system, lined by columnar secreting cells. This system finally terminates in the Malpighian bodies. In the adult the Wolffian duct is represented in the broad ligament by Gärtner's duct. From this duct numerous parovarian tubules, which correspond to the collecting tubules described by MacCallum, run downwards between the mesosalpinx to the hilus of the ovary, and in many instances are visible to the naked eye. These tubules, as is well known, give rise to the monocular, parovarian cysts. Thus far, however, the secreting part of the Wolffian tubules has not been identified in the adult ovary. It appears, therefore, to Dr. Clark that the typical glandular structures, which are so frequently found in the ovary, probably represent the secreting remains of the

Wolffian tubular system, which under genetic influences we know not of, spring into multilocular ovarian cysts. He did not believe that the one case which he demonstrated would prove this theory, and he offered it only as a contributory piece of evidence in favor of the origin of the glandular cysts of the ovary from the secretory remains of the Wolffian tubules.

DR. H. D. BEYEA read a paper on the

TECHNIQUE OF VENTROSUSPENSION.*

DR. GEORGE ERETY SHOEMAKER.—I find myself doing this operation less and less. For at least young women likely to bear children, I have been for several years making the suspension attachment a little in front of the line of the cornua. I fail to see that it makes any difference in the permanent results of the operation, as far as position is concerned. These uteri seem to remain forward, and at the same time I feel sure that in pregnancy the uterus can enlarge without bringing as much traction upon the attachment as would occur if the ligament of the attachment had passed over the top of the fundus. I have adopted practically the technique used by Dr. Beyea for some years, including the muscle, and I try to produce no fixation.

DR. R. C. NORRIS.—The question is a very interesting one from the standpoint of gynecology as well as of obstetrics. The technique I have always employed is the one described by Dr. Beyea. I have always felt a little dubious about the muscle adding any particular value. I am convinced that in some cases the silk ligatures cut through the muscle and in those cases the muscle element in the ligature amounts to nothing.

From the standpoint of pregnancy we may take it for granted, I think, that ventrofixation is never to be employed in a woman likely to become pregnant. As a second proposition, with no technique of ventrosuspension can we feel certain that fixation will not sometimes follow? With the development of hysterectomy for the treatment of pelvic inflammatory disease I find that ventrofixation or ventrosuspension is being done less and less in my own hands. In marked inflammatory disease requiring removal of the tubes and the ovaries it is best to take out the uterus and not do ventrosuspension as we used to do. In the last five or ten years I have found the results of the Alexander operation so satisfactory that whenever possible I have preferred it to ventrosuspension. The slight attachment following the technique described, which is desirable, has been followed by so many recurrences in my own hands, and I have observed the same result in some cases operated by our best surgeons, that I have come to look upon ventrosuspension as an operation which you cannot feel absolutely sure will be followed by permanent results, particularly if pregnancy intervenes. I have had the opportunity of studying several cases of ventrosuspension which have been followed by pregnancy and delivery at term, and I

*-See original article page 462.

have seen several cases in which the uterus remained in anterior position. I have more often seen cases in which the result has been the opposite. If I had known the character of Dr. Beyea's paper I would have looked up my own records, in order to be statistically accurate in my comment. My impression is that ventrosuspension in young women likely to bear children is not a desirable operation, both from the standpoint of failure subsequent to labor and from the standpoint of the added risk during her pregnancy and puerperal period. My experience, as well as my reading, point to the round ligaments as the more reliable means of holding the uterus in proper position and it appears that the majority of gynecologists are coming to utilize those ligaments in the surgical treatment of backward displacement of the uterus.

DR. JOHN B. SHOBER.—There is no operation in gynecology which I would accept with more confidence than the one described by Dr. Beyea. Throughout the country and especially among the laity there is great objection to the operation of suspension of the uterus, because of the different ways in which this operation is performed by various operators. I have been present at operations and have been surprised at the different manner in which the operation for restoring the uterus to normal position has been done by men who think they are doing a ventrosuspension. Very few perform it in the manner described by Dr. Beyea. The fact that a suspensory ligament does form at the end of a few months is undoubted. I have personally seen a number of cases where the abdomen has been opened for operation after ventrosuspension and have in one case removed the uterus with the adventitious ligament, have had the ligament examined microscopically and found muscular tissue throughout its length. I think there has been a dragging out of the abdominal peritoneum, including the muscle fibers of the recti muscles and a dragging out of the serous coat of the uterus, and in the middle of the ligament we find the seat of the ligature. This accounts for the strength of the ligament and for the fact that we have so few recurrences of retrodisplacement. This ligament is capable of stretching and does not interfere with the normal course of pregnancy. In one case in which I had performed the operation upon a young woman before her marriage, I was severely criticised by the family, because during the first few months of pregnancy she had pains, cramps and discomfort, and her family thought this was due to the operation performed previous to her marriage. Her physician in Newport summoned Dr. B. C. Hirst from Jamestown for the purpose of examining the patient and operating to release the fixation, as he called it. Dr. Hirst took a very wise and conservative view of the case and pointed out that these pains were not uncommon in primiparæ and advised letting the condition alone. In a few weeks the symptoms disappeared, the woman went on to a normal pregnancy and has since then borne two children.

I know there is a decided prejudice against the operation on

the part of a large body of the profession throughout the country, but I am sure that it is due to the fact that it is so often improperly performed. We seldom have recurrences, pregnancies and labors are not disturbed and the symptomatic cure is most satisfactory in a large majority of cases.

I believe the Alexander operation has its place in a very few selected cases, but I notice that in the hands of even the best operators recurrences take place more frequently than they do with those who perform ventrosuspension as described by Dr. Beyea. The advocates of Alexander's operation claim that when necessary they open one or both internal rings and deal with adhesions or remove ovaries and tubes. In such a procedure I fail to recognize any advantage over a small central incision which, when properly closed, never results in hernia. When both rings are opened it is a distinct disadvantage.

DR. JOHN G. CLARK.—My theoretical objection to the inclusion of any muscular tissue in the suspensory stitch has been the fear that it would produce actual fixation rather than suspension of the uterus. Dr. Beyea's report of a large series of cases, however, appears to me to effectually refute this theoretical objection.

Dr. Beyea speaks of the participation of the muscular tissue in the formation of the adventitious suspensory ligament. I hardly see how this is possible in view of the fact that the peritoneum of the anterior abdominal wall is opposed directly against the peritoneum of the uterus; thus adhesions taking place between the peritoneal surfaces would effectually exclude the muscular tissue. As I view it, through the inclusion of the muscular tissue the band of adhesions, which subsequently forms the suspensory ligament, is made firmer and broader, and thus renders the dangers of a recurrence much less.

Relative to the frequency of the employment of the suspension operation, I may say that for the last two or three years, influenced more by the report of complications in pregnancy and in labor than by any actual experience of my own, I have resorted more and more, especially in young women, to the intra-peritoneal shortening of the round ligaments. In this operation a sufficient amount of the round ligaments is stitched together, to take up the slack, a small incision is made just anterior to the uterine insertion of the round ligament, and the doubled ligament is stitched into this incision. On the whole this has proved a satisfactory operation, although there have been one or two recurrences; but this may be said of any other operation. In view of the many good results and the comparatively few complications following the employment of the suspension operation, I am inclined to believe that upon the whole it is giving more general satisfaction than any other operation for the replacement of a retroflexed uterus.

DR. BEYEA.—Of course our experiences, the results of operation, are considered from the personal point of view. With Dr.

Shober I do believe this operation is one of the most satisfactory, to both patient and surgeon, that we perform. Following the Alexander operation we hear of at least as many recurrences. We hear of the ligament pulling out, of its being atrophied or the operator being unable to find the ligament. Some go so far as to say the Alexander operation is a fixation of the uterus. I have had no experience with the operations of intraabdominal shortening of the round ligaments.

Answering Dr. Clark, I cannot state there is actually any great amount of muscle tissue contained in the ligament, at least as demonstrated by microscopic examination, but we believe with the slow traction of the uterus on its attachment to the abdominal wall a few fibers of muscle tissue are pulled out from the rectus muscle above, and from the uterus below, and are thus contained in each end, each outer third, of the ligament. This because each end of the ligament is spindle shaped and of the natural pink, muscular color. At a secondary operation the character of appearance of the ligament would make one sure of this.

The position of the sutures I have not found to be as Dr. Shober states. The sutures are usually found contained in that portion of the ligament in relation with the abdominal wall. It is possible that in those cases where the sutures are tied very tightly they do cut out. There is no way of demonstrating this. But if not secured too tightly, and yet sufficiently to bring the uterus firmly in contact with the abdominal wall, they do not cut out, at least not until their function is carried out. The muscular character of ligament was formed in all the cases re-operated upon. I have observed an abnormally long ligament in one of the cases. In one of our cases before the abdomen was opened, the operation being performed by another surgeon, there was no statement made that the uterus was in other than normal position, but after the abdomen was opened the ligament was found long and the uterus in the position of the second degree of retroversion. The case was considered by the operating surgeon as an instance of failure of the operation. This, however, should not be called, truly is not, a failure, for it was the change in intraabdominal pressure taking place with the opening of the abdomen and the anesthesia which caused the uterus to drop back. The ligament is not an everlasting supportive structure to the uterus. It brings the uterus forward and maintains it in this position until the normal supports regain their tonicity and function. If we were to depend absolutely upon the ligament itself there would be a great number of recurrences.

TRANSACTIONS OF THE WASHINGTON OBSTETRICAL AND GYNECOLOGICAL SOCIETY.

Meeting of December 16, 1904.

The President, J. WESLEY BOVÉE, M. D., in the Chair.

DR. G. BROWN MILLER read the paper of the evening,

POST-OPERATIVE COMPLICATIONS INVOLVING THE BRONCHI AND LUNGS.*

DR. SHANDS could recall only two cases of pneumonia following operation. One originated on second day. There was profuse expectoration. The case recovered.

DR. ADAMS is convinced that many deaths and complications of operating which are attributed to the anesthetic are really due to the disease or the operation.

DR. HAGNER has seen two cases of pulmonary embolism. One was a case following a Bottini's operation. Three or four days after operation the patient had sudden pain in the chest, cyanosis, and rapid respiration. He grew better, but after a few hours had another attack, with profuse, bloody expectoration, and died.

The other case was a young woman who developed phlebitis after labor and was allowed to walk around. She had an attack of rapid respiration and pulse. There was no physical signs for ten days, and then there developed bronchial breathing and signs of pneumonia. She finally recovered.

A few months ago he had a case of bronchopneumonia, following a suprapubic cystotomy for calculus, which died after three weeks.

DR. LOREN JOHNSON cited a case where, after an operation for myomata, a phlebitis developed. After a few days there was rapid pulse and cyanosis. After three to four days bronchial breathing developed. It was probably an internal infarct.

DR. MACATEE was reminded of two cases, both men of sixty years of age, with epithelioma of the lip. Both took general anesthesia and both died of pneumonia after a few days.

DR. WHITE says that the paper calls attention to the medical side of surgical cases. He does not believe as a rule that a sufficiently careful examination is made, prior to operating, of the patient's general conditions. Many cases are due to sponging out the throat of patients. Patients should be carefully protected against catching cold both in the operating room, on their way

* See original article page 445.

back to ward, and after their return. The bed should be warmed before the patient is carried back to the ward.

The treatment of pneumonia after operation is stimulation.

DR. SPRIGG asked if the use of nitrous oxide had lowered mortality for anesthetization.

DR. LEWIS told of a case where a child had an abscess of the middle ear, following grippe. It had enlarged cervical glands and fever. He removed the glands, operation over by 12 o'clock, and by 3 o'clock it had a temperature of 104° F., and developed pneumonia of the right lower lobe. Case went from bad to worse. It developed abdominal distension. Pulse 130. Dr. Stone, who saw it, thought it to be intestinal obstruction. Child died and autopsy showed loops of distended gut with intervals of contraction. There was an acute pleurisy with a pint or more of fluid in the chest cavity. The case emphasized the fact that we should be careful not to operate upon grippe patients.

He has seen cases of pulmonary embolism following appendectomy.

DR. HAGNER spoke of the possibility of confounding other conditions with post-operative pneumonia. He cited a case which developed a high temperature a few hours after operation and which was at first diagnosed pneumonia, but which proved to be a severe attack of malaria.

DR. ACKER thinks in former years that there was not so much pneumonia. The patients did not have to wait so long after being anesthetized before being operated upon. The surgeon should be ready to operate immediately after the patient is under the anesthetic. Rapidity tends to prevent lung complications. The tendency of the present day is slowness in operating.

DR. PRENTISS cited in contrast to the many bad results of operation a case where a woman had a bad bronchitis and who was operated upon by mistake. The bronchial trouble rapidly cleared up after the removal of a large sarcoma of the ovary.

DR. KELLEY congratulated the writer upon his paper. He thinks Dr. Acker's point well taken. Rapidity in operating is very important.

DR. BOWEN agrees with Dr. Acker that much time is unnecessarily lost after the patient is anesthetized.

DR. SPRIGG thinks the amount of the anesthetic important. Some anesthetists keep the patient too far under. He cited a case of his of persistent bronchitis following anesthetization.

DR. MILLER wished in closing the discussion to emphasize a few points. He believes more cases of pneumonia are of embolic origin than is usually thought. The same can be said of pleurisy. The cases cited in his paper showed that one-half of the cases of pleurisy were probably dependent upon an infarct.

The anesthetic does not probably play as great a rôle primarily as cold and embolism in causing lung complications.

NEW YORK ACADEMY OF MEDICINE—SECTION ON
PEDIATRICS.

Meeting of March 2, 1905.

CHARLES L. DANA, M.D., *in the Chair.*

GONOCOCCUS INFECTION IN CHILDREN.

DR. L. EMMETT HOLT read this paper. He said that this subject was interesting to the genitourinary surgeon, the obstetrician, the gynecologist and the oculist, as well as to those interested in pediatrics. He suggested substituting the terms gonococcic ophthalmia, vaginitis and arthritis for the terms gonorrheal ophthalmia, vaginitis, arthritis, as this latter suggested a venereal origin which was seldom the case in young children. He related his experience with gonococcus infection in the Babies' Hospital during the past eleven years. In 1894 when no bacterial examinations were made, only the most marked or severe cases were entered as vaginitis or ophthalmia. In that year 7 cases of vaginitis were recorded, all of which were admitted with the disease; 4 cases of ophthalmia were recorded, all in newly born or very young infants. No special pains were taken at that time in the disinfection or isolation of cases. In the following year the total number of recorded cases was 15, 6 of vaginitis and 7 of ophthalmia. In 1896 there were no cases recorded for the first eight months of the year. In this year examinations of vaginal discharges were made for the first time in the institution. The total number of cases was 9, 4 of vaginitis and 2 of ophthalmia. One case of arthritis developed in the hospital. In the light of more recent experience, it is probable that this case contracted the infection from others, as there were three cases of vaginitis in the same ward. In 1897 there were 11 cases of vaginitis and 6 of ophthalmia admitted; 5 cases of vaginitis and 1 of ophthalmia developed in the hospital. In 1898 there were 5 cases of vaginitis and 12 of ophthalmia; 5 cases of vaginitis developed in the hospital.

In 1899 three children were admitted and sent to the country home before it was discovered that they were suffering from vaginitis. They all came from the same day nursery. A serious house epidemic developed which continued during the entire summer, practically all the inmates of one house being infected. All efforts at quarantine and disinfection proved ineffectual in checking the spread of the disease. The type of the disease in this epidemic was moderately severe. Greater care was exercised in admitting infected children to the wards. The result was that for a period of sixteen months there were only 10 cases of

gonococcus infection recorded, 4 of these being admitted and 6 having acquired the disease from them. The year of 1900 was a repetition of the preceding one. One girl of two years was unintentionally admitted and sent to the country home and two received from other hospitals were found to be suffering from the disease. These three caused another house epidemic of 22 cases during the four months of summer. There was the same inability to check the spread. General house infection seemed to be the only explanation of the development of these cases.

In 1902 much more strict regulations regarding admission were enforced, yet six children were admitted at various times who were infected. These were quarantined as soon as discovered, and yet 11 secondary cases developed. Shortly after moving into a new hospital one case of ophthalmia was admitted and within the next few weeks, with absolutely new, clean wards, 11 fresh cases developed, including three of gonococcus arthritis in boys under two and one-half months old. During six months from 5 infected cases that were admitted, 29 cases of vaginitis developed and 8 cases of gonococcus arthritis. In 1903 infection was again introduced into the country branch through a child from another hospital. The epidemic, though not so severe as the previous ones, caused great anxiety. The record for the year was 10 cases of vaginitis admitted, 55 acquired; 1 case of ophthalmia admitted, 1 acquired; 2 cases of arthritis admitted, and 10 acquired. The large number might be accounted for by the fact that routine examinations were regularly made; many mild cases would not have been recognized without such examinations. In the summer of 1904 the rule was adopted that no female child would be admitted without a microscopical examination of the vaginal secretion. The record for 1904 was 52 cases of vaginitis, but only 16 of these could have been diagnosticated without bacteriological examination.

In seeking to determine to what extent vaginitis existed in other institutions he had not depended upon annual reports, but upon information from head nurses and hospital superintendents. These had come from almost every large hospital in the city to learn what could be done for this class of patients. It seemed that it was almost constantly present in children's wards. The matrons and managers of day nurseries are seldom unaware of the prevalence and dangers of this form of infection, and yet the hospitals received many cases from these institutions. He then gave the results of an investigation in this respect in several institutions, which served to give an idea of how generally prevalent gonococcus vaginitis was. His investigations showed that there was no more vaginitis in the Babies' Hospital than in other similar institutions, and that since the rigorous measures of quarantine and treatment there was much less than in most others. He had gone into detail to make it evident that in the gonococcic infections we had to deal with an organism which was very widely spread and highly contagious, and exceedingly diffi-

cult to eradicate from institutions because of the prolonged duration of the cases and the obstacles in the way of complete cure.

In considering the clinical manifestations of gonococcus infection only the three principal forms have been observed—vaginitis, ophthalmia and arthritis. They were made upon children up to three years of age. In two instances abscesses containing the gonococcus elsewhere than in the joints were found. There was only one case of gonococcus urethritis. There were no instances of endocarditis, pericarditis, peritonitis, or pelvic inflammation, and none of proctitis. In well marked cases of vaginitis the symptoms were fairly easy of recognition, the discharge was moderately abundant, yellow, or greenish yellow in color and occasionally tinged with blood. Extension to the uterus, tubes, and peritoneum was not observed, nor was cystitis met with; urethritis was not common and seldom severe. In milder cases the discharge might be so slight as to escape detection except by close inspection. Constitutional symptoms are very few and insignificant, and the temperature seldom rises over 101 degrees. The gonococcus is a diplococcus which decolorizes when stained by Gram's method; to be diagnostic it must be found within the pus cells. In gonococcus vaginitis this is usually the only variety of bacteria present. It has been his custom to regard as suspicious all cases of vaginal discharge in infants in which many leucocytes are present. In his experience a non-specific purulent vaginitis has been uncommon. One of the most troublesome features of this affection is its intractability; in spite of constant local treatment it sometimes continues for six or eight weeks. The use of proper local measures is difficult in young patients. In regard to ophthalmia he said he could add nothing to what was already well known. He considered arthritis the most interesting phase of the gonococcus infection in children. He gave a report of 26 cases which he thought was the largest group of cases of this kind reported in literature in a single institution. Of these 19 were male and 7 female. Sixteen of these cases were three months old or younger. A single joint only was involved in but 5 cases. Three or more joints were involved in 16 cases. The largest number of joints involved was eight. The superficial symptoms are a rapidly developing articular swelling with early redness, acute tenderness and in cases going on to suppuration usually fluctuation at the end of a week. There was not much edema in the neighborhood of the joints, but the usual characteristics of acute pyemic arthritis. He thought that about one-third of the joints in which inflammation terminated in suppuration resolved. The pus was frequently a thin sero pus. Of 21 cases in which the temperature charts were kept, the fever reached 103 degrees or over in 15 cases; in 5 it was 104, and in one 105. The fever lasted in one case for eight weeks, in 9 either three or four, in 4 cases two weeks and in 7 but one week. Other symptoms were wasting, prostration and exhaustion. Fourteen of the children died. In many of these cases death was due to marasmus and

not to the pyemia. The pathological process in the joints was an acute inflammation, chiefly affecting the synovial membrane. There was a complete recovery of function in many, and a slight stiffness in a small number, and marked fibrous ankylosis in only one or two. In children whose conditions was fairly good, early incision and washing out usually sufficed for rapid cure. Prolonged discharge with the formation of sinuses was not seen. It was difficult to diagnose this condition as it resembled acute articular rheumatism, but this disease was exceedingly rare in children under one year, so that the symptoms described should always suggest pyemic arthritis.

As to the means by which infection is spread he said that under three years of age direct contact, sexual or through the hands, played no part. The most obvious means was through the medium of napkins. It had been their custom to soak the napkins in a disinfectant, boil in suds and put through a steam sterilizer. Thermometers, nipples and bottles were kept separate with the greatest care. Sponges were abolished and absorbent cotton used for bathing purposes, which was immediately destroyed. Bathing in tubs was interdicted, yet the infection spread and there was only one explanation; the nurses carried the infection. Quarantine of both child and nurse was the only means by which spreading could be checked. He cited cases where it seemed evident that the nurses had conveyed the disease. One of the most difficult questions to solve is how the gonococcus gains entrance in certain cases of arthritis. He suspected that in some cases it was through the mouth. The nurses no longer cleansed the mouths of infants with absorbent cotton around the little finger, but used a wooden toothpick instead.

In a disease so difficult to cure, and so highly contagious, it was of utmost importance that we should attach much importance to prophylactic measures. In institutions it is essential that we exclude gonococcus vaginitis as far as possible, and if it is admitted by accident it must be quarantined. In excluding cases only one thing could be depended upon, and that was the bacteriological examination. Children applying for admission with such conditions that they must be received should be isolated. Even the cases of gonococcus arthritis should be isolated. In the Babies' Hospital a smear from the vaginal secretion of every girl is examined once a week. This might not be necessary so frequently where there are not so many admissions. In institutions where microscopical examinations are not possible, the use of a fold of gauze placed between the labia will be found useful as it will show even a very slight discharge. If at all purulent the case should be regarded as specific until microscopical examination shows it to be otherwise. On no account should napkins, underclothing or sheets from infected children go into the general laundry of the institution. Sponges and wash cloths should not be used in an institution. Bath water and the bath tub may harbor the infection and convey disease even though the water

has been changed. The most scrupulous precautions should be taken with reference to the nurses' hands. They should be carefully washed in a disinfectant after bathing or changing the napkins of each child. Thermometers, catheters, syringes or tongue depressors may be the medium of contagion unless sterilized after use. After an outbreak in a ward as much thoroughness in fumigation should be employed as after an outbreak of scarlet fever. Frequently all these things have been thoroughly carried out and yet the disease spread from one child to another until isolation was practiced.

General Conclusions.—(1) We must recognize gonococcus vaginitis as a very frequent disease and one to be constantly reckoned with in institutions for children. It is also very frequent in dispensary and tenement practice and not uncommon in private practice of the better sort.

(2) In its milder forms and in sporadic cases it is extremely annoying because so intractable; in its severe form it may be dangerous to life through setting up an acute gonococcus pyemia or infection of the serous membranes, and in its epidemic form it is a veritable scourge in an institution.

(3) The highly contagious character of gonococcus vaginitis makes it imperative that children suffering from it should not remain in the same wards or dormitories with other children. A similar danger, though less in degree, exists with the gonococcus ophthalmia and acute gonococcus arthritis or pyemia.

(4) It is practically impossible to prevent the spreading of the disease if infected children remain in the wards with others. They must either be excluded from the hospital or, if admitted, immediately quarantined.

(5) Cases of gonococcus vaginitis can only be excluded from hospital wards by the systematic microscopic examination of a smear from the vaginal secretion of every child admitted. If a purulent vaginal discharge is present such examinations are imperative and should be made as much a matter of hospital routine as the taking of throat cultures in children with tonsillar exudates. In the absence of a bacteriological examination a purulent discharge in a young child may be assumed to be due to the gonococcus.

(6) The quarantine to be effective must extend to nurses and attendants as well as to children. Furthermore, the napkins, bedding, and other clothing of infected children must be washed separately from that of the rest of the house.

(7) Where the gonococcus is found with no vaginal discharge or with a very slight discharge, children should also be quarantined, although it is impossible at present to say to what degree such cases may be dangerous in the ward. One of the greatest difficulties in connection with the gonococcus vaginitis arises from the prolonged quarantine rendered necessary from the fact that these cases are of very chronic character and very resistant to treatment.

(8) Nurses. The danger to nurses from accidental infection, especially in the eyes, is considerable. At the present time they are not sufficiently instructed in this respect.

DR. F. C. WOOD said that he had but little to add from the point of view of the clinical pathologist to the facts which Dr. Holt had so ably presented in his paper. Some of the technical details used, however, might be of interest to the members of the section.

Cultural procedures for the isolation and identification of the gonococcus were so complicated and difficult of execution that they must be left for the trained bacteriologist. The practitioner must always depend upon the morphological identification of the organism in smears. The speaker had been accustomed to take advantage of the sharp morphology of the organisms when stained by means of the Jenner blood stain. The smears should be very thinly spread and as soon as dry could be stained for three minutes. At the end of this time the bacteria were fixed and stained. If the smears were from a case of gonococcus infection, it was usually very easy to find the characteristic organisms in the bodies of the leucocytes. The Jenner stain gave a specially good differentiation because the cell bodies stained reddish, while the gonococcus took a deep blue stain. It was important, however, to remember that other cocci could assume the biscuit shape and also be found in the bodies of the leucocytes. This is especially true of the micrococcus catarrhalis, which had been found in the urethra. These organisms were, however, usually larger than the coccus. It was advisable to keep some stained smears containing undoubted gonococci to control the microscopical findings. The micrococcus catarrhalis was also negative to Gram, so that this procedure offered no differential points.

If, after some search, organisms were found which were in pus cells but did not correspond to the morphology of the gonococcus, it was convenient to do a Gram stain on top of the Jenner preparation. The slide could be ringed with some water proof ink, or the position of the doubtful cells marked on the coordinates of a mechanical stage, and preferably after the fixation of the slide by heat, a Gram stain could be carried out in the usual manner. The same group of organisms could then be reexamined and their relation to the Gram stain determined. This was somewhat more convenient than making a Gram stain first, as it was more difficult to find the organisms than with the Jenner. Special care should be taken in obtaining material so that the difficulties of diagnosis were not increased by the presence of a large number of saprophytic bacteria which were frequently present in the vulvar region. It was better in the case of children with abundant discharge to pass a small platinum loop into the vagina and urethra if possible, and thus obtain material uncontaminated.

As regards disinfection of the linen in these cases of gonococcus vaginitis in children, the most suitable method seemed to be the

use of one of the more penetrating disinfectants, such as formaldehyde or carbonic acid, for the preliminary disinfection. All clothing should afterwards be boiled or thoroughly steamed. The gonococcus is well known to be one of the most easily destroyed organism, but sometimes a superficial disinfection with a non-penetrating disinfectant, such as bichloride, might leave living organisms inside the mass of mucus or pus.

DR. J. CLIFTON EDGAR.—From the obstetricians' standpoint gonococcus infection in infants concerns the eyes, the mouth, the stump of the umbilical cord and the vulvovaginal canal, resulting respectively in gonococcus ophthalmia, gonococcus stomatitis, gonococcus ophthalmitis and vulvovaginitis. Three of these infections, namely, eyes, mouth and vagina, are infections of the mucous membranes, and one, namely, the umbilicus, is an infection directly into the lymphatics or veins of the stump of the umbilical cord. From the standpoint of the obstetrician gonococcus infection of the mucous membrane of the eyes is by far the most frequent of the four sites of infection. The delicate mucous membranes of the eye of the newly born offer little resistance to gonorrheal infections, especially after improper and rough efforts to cleanse the eyes. Then again, the eye may be injured during rough vaginal examinations, during labor in face and brow presentations, and in different extractions of the after-coming head in breech presentations. These abrasions of the mucous membranes render the occurrence of infection more liable to occur and more serious in character.

Our knowledge of gonococcus infection of the mouth, umbilical stump and vagina in the newly born is not what one might expect—it is very meager. Nothing of great value has ever been published on these infections. There are two reasons for this: (1) The subject is a borderland subject, divided up among the obstetricians, the pediatricist, and the ophthalmist. Each specialist cares only for a particular aspect of the subject. As some one has said, "the oculist has no interest in lesions of the mouth, umbilicus or vagina." Then again, the obstetrician is chiefly interested in the subject of intrapartum transmission, to the neglect, perhaps, of other methods, and the pediatricist sees his cases too late to enter into the question of transmission. Furthermore, it is now realized that the very young baby is highly predisposed to gonococcus inoculation, and that it is quite as likely to be infected after as during birth. Hence, recent writers, in treating gonococcus infection in children, make hardly any distinction between gonorrhea neonatorum and the same disease in young infants in general.

Rosinski, in 1891, first described gonorrheal stomatitis, and he could find no literature on that subject up to that date. Baginski, writing in 1903, believes that he is the first to publish anything on gonococcus infection of the umbilical stump, it having previously been assumed that umbilical infection is due to ordinary pyogenic cocci. His case so far as he knows is the first on

record. An ulcer in the mouth gave negative results. Transmission could not be traced. Aichel, writing in 1891, maintains that vulvovaginal gonococcus infection of the newly born has been recorded only a few times. Aichel could find records of but two cases of this infection to which he adds a third. In two of these cases infection undoubtedly occurred during labor. In Morgenstein's case transmission was not evident. My belief is that gonococcus infection intrapartum or directly postpartum of the mouth, umbilical stump and vulva and vagina are very rare conditions and seldom met with. This infrequency we might expect from the nature of the conditions, namely, the ligature of the cord, and the nonexposed condition of the mucous membrane of the mouth and vagina. Moreover, modern prophylactic measures have greatly reduced the frequency of gonorrheal ophthalmia of the newly born. From 12 per cent. to less than 2 per cent. During the past five years at the Bellevue Emergency Hospital there has been no instance of serious cord suppuration. There were four such cases, but they all yielded to treatment and were discharged at the end of fifteen days. One of these cases showed a purulent ophthalmia coincident with suppurative ophthalmitis. No case of cord suppuration was transferred during this time. There was at this time no case of ophthalmia that did not yield readily to treatment of a few days. No cases of sore eyes were transferred. Several mothers with little children were transferred immediately after labor because of evidences of vaginal inflammation. Purulent ophthalmia occurred in most of these cases. My resident nurse tells me as far as she has been able to trace them, these cases resulted in no losses of sight. In 800 cases recently delivered in Dr. Hill's Out-door Tenement Service in Seventy-sixth street, there are records of five cases of ophthalmia, two of which were so severe as to necessitate being transferred to a hospital. Several superficial local infections of the cord, and one death from probable gonococcus cord infection, although an autopsy was refused.

From the obstetrician's standpoint the interest in gonococcus infection of the newly born centers in prophylactic treatment. The scientific gospel of Bunn and Kronig, namely, that the vaginal mucus has a bactericidal action, has been misunderstood as applying to the gonococcus. It has no such action. The fetus has been infected with the gonococcus *in utero*. In the section on Prophylaxis of Ophthalmia Neonatorum in Winckel's Handbook, Ed. 11, it is stated that there are a number of reports which show that a fetus may be infected with the gonococcus *in utero*, and be born with well developed conjunctivitis. If the vagina is usually sterile, it needs no preparation for labor, if the reverse it does. It is my belief that in hospital practice such preparation of the vagina is necessary to prevent ophthalmia neonatorum. At the Emergency Bellevue Obstetric Service and N. Y. Maternity after repeated attempts to do away with antiseptic preparation of the vagina for labor, I have abandoned the attempt and

now always use antepartum vaginal irrigation* as a prophylactic measure. Both services are largely venereal in character. In private practice I am not accustomed to use antepartum vaginal irrigation—this is a concession to the popular belief that there is less gonococcus infection in private practice, and yet every now and then I see gonococcus ophthalmia in spite of Crede's nitrate of silver method of prevention. Such a case occurred in my practice where the husband had acute gonorrhea in August and married in January. The baby had all but lost the sight of both eyes, but finally recovered. Antepartum vaginal preparation and Crede's nitrate of silver method after birth will greatly reduce the percentage of gonorrheal ophthalmia, but they can never entirely abolish it.

It has been proven conclusively that the gonococcus may invade uterus and infect fetal eyes antepartum.

The obstetrician knows of no method that will positively prevent the occurrence of gonococcus infection of the fetus in a woman the subject of such infection. So long as men with gonorrheal infection are permitted to marry, and women with gonococcus infection to conceive, so long will there be danger of gonococcus ophthalmia in the newly born child.

DR. R. B. KIMBALL referred to an experience of his one year ago last summer at Sea Bright; a gonococcus infection broke out after he was down there but one week. The cases were isolated and the facilities for such isolation he said were good. The nurses who attended these isolated cases were not allowed to go near the other beds or other nurses. Each child had its individual thermometer which, after using, was kept in strong bichloride or alcohol. All napkins were destroyed and new material purchased from which new napkins were made. In spite of all precautions the infection spread just the same. He thought the spreading occurred mainly through the fault of the night nurses, who had so many changes to make through the night that it was impossible for them to properly cleanse their hands. He said that very few could comprehend the insidious nature of the infection; one could not appreciate it unless they served in an institution for infants. It seemed strange that in the Babies' Hospital no cases were met with in adult females, who numbered about 30. It was also surprising that the importance of the infection was not recognized by the health authorities and ranked with other acute infectious diseases and tuberculosis.

DR. KOPLIK said that when he took charge of the Mt. Sinai Hospital service for children there was not a female child on that service who was not the subject of gonococcic infection. A child once infected he knew of nothing more baffling than efforts at ridding the child of this infection, and he believed that when children once contracted the disease they were more or less crippled for life. When he first took charge of his service he was compelled to find some remedy to control the disease on account of its widespread prevalence, and he tried every possible means and

finally devised one of the most perfect systems of prophylaxis and isolation practiced in this city; at the same time the system was an expensive one, 140 diapers being used daily, the annual cost was \$1,500 for this item alone. The diapers were burned after being soiled. The great question arose recently as to how to limit or to do away with this expense. He went to the different institutions in this city to see how they prevented this infection, and he could, as a result of this visitation, confirm what had already been stated, that there was not an institution in this city devoted to the care of children, that was not the seat of gonococcus infection endemic and epidemic. In every one their system of prophylaxis was imperfect. In one institution they were very careful in sterilizing the napkins, but the same thermometer was used for 12 or 15 children in the ward. In yet another institution all the children in one room were bathed in the same tub. Dr. Koplik advised that they be bathed in their cribs. In the prevention of the spread of this disease and the stamping out of it the most perfect prophylaxis should be enforced. Dr. Koplik had not had a single epidemic of vulvovaginitis for at least two and a half years because of his prophylactic measures. Every gonorrheal case that came into his service was immediately isolated, given a separate bed, special nurses and utensils, and the beds were marked with red ribbons to distinguish them. He said he was not afraid to take such a case into his institution and into the wards with other children, if he could have his directions carried out by his nurses. Every child in the service had its own thermometer, bed pan, its own liquid soap, its own wash rag, its own comb, which could be boiled, and its own wash basin. By such prophylaxis each baby was as completely isolated from its neighbor in the ward as though it were in a separate room. He did not believe that diapers could be disinfected chiefly because the nurses and other ward help could not be depended upon except for a short time to carry out proper disinfection.

BRIEF OF CURRENT LITERATURE.

OBSTETRICS.

Recent Researches Concerning Eclampsia.—The theory of Veit that the cause of eclampsia is the wandering of syncytial elements into the circulation is opposed to that advanced by Ascoli, who considers that there is an over-production of syncytiolysin which is formed in accordance with the laws of over-compensation. Weichardt is of the opinion that the syncytiotoxin produced by the syncytiolysin and not neutralized by the system is the causative factor in the condition. Weichardt's experiments, in which he injected animals with a mixture of placenta paste and specific serum, showed in 30 per cent. of the cases typical eclamptic attacks in which well characterized lesions of the liver were found. Similar experiments have been made by other investigators with varying results. Wormser and Lathardt (*Münch. Med. Woch.*, Dec. 20, 1904), although they obtained negative results, believe that experiments along these lines are of great importance. The technique was as follows: After the placenta of a normal case had been expelled from the uterus and that part of the cord which had protruded from the vulva was cut away, the placenta was received in a sterile vessel and covered by a second. The placenta was either immediately treated or placed upon ice for a period not exceeding eight hours. The process consisted in removing the blood as completely as possible. This was accomplished by forcing sterilized normal saline solution into the umbilical vein. In each case about ten liters of fluid were used from a height of five feet. The uterine surface of the placenta was carefully cleansed. Those portions of the placenta which were most free from blood were then cut off and passed through a sterilized meat presser. This extract, after dilution with saline solution, was injected into the abdominal cavity of rabbits. These animals were treated with 15-20 c.cm. of the preparation every four days, and eight days after the last injection were bled from the carotid. The autopsy showed that six animals were healthy and their serum was used for experiments with syncytiolysis in vitro. The results were all negative. In ten rabbits an attempt was made to produce artificial eclampsia. The serum employed for this purpose was in no case older than twenty-four hours. The method employed in these tests was to mix an equal quantity of serum with crushed placenta. The mixture was then placed for two hours in the incubator and then kept for sixteen to twenty-four hours upon ice, being thoroughly shaken several times in the interval. The clear fluid was decanted and subcutaneously injected into the roots of the ears of new rabbits. In no case did these animals show the slightest reaction. The negative results

which most authors have obtained in attempting to artificially induce eclampsia have given a serious set-back to the biochemical hypotheses which have been advanced to explain the causal conditions of the disease.

Lumbar Puncture in Eclampsia.—Max Henkel (*Zent. für Gyn.*, November 12, 1904) employed this procedure in 16 cases of eclampsia with a mortality of 25 per cent., which is not better than the average mortality of Olshausen's clinic in similar cases. The puncture was performed in the usual manner; to obtain better drainage the patients were in some cases slightly elevated. In 7 cases no fluid was obtained; of these 1 died. The autopsy of this case showed that the spinal canal was without fluid, while a moderate effusion into the ventricles was found. The meninges were normal. A small amount of fluid came from 5 of the patients, and of these 2 died. In 4 cases the cerebrospinal fluid was greatly increased and flowed through the needle under high pressure. Only 30 c.cm. were allowed to flow off. Henkel concludes that the quantity of cerebrospinal fluid is in very slight degree a causative factor in the production of convulsions.

Ovariectomy During Pregnancy.—Andebert (*Ann. de Gyn. et d'Obst.*, November, 1904) cannot agree with Pfannenstiel, who maintains that the operation is indicated as soon as the diagnosis of ovarian tumor has been made in a pregnant patient. In the case which he reports the woman was already in the seventh month of pregnancy. In the interest of the child no intervention was made until maternal symptoms of compression became menacing. Two days after the operation the child was born. It was in good condition and weighed about 6 pounds. Andebert believes that in order to increase the chances of viability of the child the operation should be postponed until the condition of the mother demands relief. This procedure necessitates keeping the mother under continuous observation.

Extra Ovular Gestation.—Maci and Moncany (*Bull. di la Soc. d'Obst. de Paris*, No. 1, 1905) were able to find only two similar cases in the German literature and five in the French. The bulk of the fetus was 265 c.cm. as measured by the quantity of water it displaced. It could not have been contained within the membranes, as their capacity was but 80 c.cm. The pregnancy is supposed to have been extra ovular, in which the membranes had prematurely ruptured and the development of the fetus had been extra membranous. No diagnosis had been made of a pathological condition, although attention had been called to the discrepancy between the size of the uterus and the calculated duration of pregnancy; also the very gradual increase in size of the uterus from month to month could not be satisfactorily explained.

Artificial Interruption of Pregnancy With the Bougie.—Jacoby (*Arch für Gyn.*, Bd. 74) reports the use of Krause's method in 228 cases. The operation is very simple and the instruments required consist of a pair of tenaculum forceps and an American

bougie of 8-10 mm. diameter. A pliable metal bougie was used and found to be of value, having the advantage of durability and cleanliness. In the great majority of cases a single bougie was successful. In 10 per cent. two bougies were necessary, and in 1 per cent. 3 or 4 bougies were required. The average time before the onset of labor after introduction of the instrument was 24 hours. The results were favorable for both mother and child, and the method is recommended.

Digital Dilatation of the Cervix.—Koppe (*Zent. f. Gyn.*, Nov. 12, 1904) believes that the fingers are more suitable for rapid dilatation of the cervix than a metal instrument, and recommends a technique which he has employed successfully. The uterus is pressed downward by an assistant while the middle, index and fourth fingers of the operator's left hand, held approximately in cone shape, are gradually forced into the cervix until a dilatation of sufficient degree has been produced to enable the right hand to be brought into service. For this purpose the fourth finger is removed while the middle and index fingers draw the cervix down and press it against the symphysis to hold it in place while the index and middle fingers of the right hand, the closed surfaces of the hands in contact, are pushed through the cervix under the left hand. By flexing the fingers a firm hold is obtained, and by a lever-like movement the cervix is soon sufficiently dilated to allow the use of forceps. This method is less violent than an instrumental dilatation, and one can estimate better the degree of the resistance and the progress.

Prophylactic Use of Ergot During Labor.—Prüsmann (*Münch. Med. Woch.*, Jan. 10, 1905) seems quite enthusiastic as to the advantages in the use of this drug in special cases. He has given it a trial upon a large material. The preparation used was a 15 per cent. aqueous solution of ergotin to which a few drops of carbolic acid was added. Of this solution 2 to 4 c.cm. were injected hypodermatically in the gluteal region (1) in spontaneous births when the head is almost born; (2) when the forceps is used, at the time of their application; (3) in case of breech extraction, when the body is being born. Olshausen considers that it is not contra-indicated in inefficient labor pains when the head is on the pelvic floor, provided that the heart is carefully watched and the forceps applied upon any indication in the interest of the child. For Cesarean section 2-3 c.cm. are given as above, 10 minutes before the operation begins. The following indications are given: (1) All operative births; (2) plural births; (3) hydramnion; (4) double deformities of uterus; (5) fibroid uterus; (6) inefficient labor pains, (a) of the opening period, (b) of the period of expulsion; (7) history of a hemorrhage due to atony; (8) Cesarean section. In 293 forceps deliveries hemorrhage occurred in but 3 cases, although the indication for forceps was in 79 of them inefficient pains. In 102 plural births there was but one case of atonic bleeding.

Suture of Perineal Lacerations.—To avoid infection of a lacerated perineum by vaginal secretions, air, feces or soiled linen, and on account of the difficulty of operating through the blood that follows expulsion of the placenta, Rose (*Zent. für Gyn.*, Nov. 19, 1904) has until recently sutured the perineum as soon as the child was born and before the placenta was expelled, the patient lying on her side. This method was not entirely satisfactory, as in some cases the birth of the placenta tore open some of the sutures and this contingency has led the author to try a method which has given entire satisfaction. It consists in suturing the entire wound, care being taken to include as much tissue as possible at the sides of the laceration. The sutures are not tied until all have been applied and then in case the vagina has been lacerated the tying should begin with the sutures uniting this portion of the wound. The tying consists in half a surgical knot, which allows an approximation of wound surfaces, but also permits of as much slack being given as is necessary for the birth of the placenta. After this has taken place the sutures are tied as usual. The advantages of this procedure are the early closing of the wound, consequently reducing liability of infection and increasing the chances for a primary union, the ease with which the suture can be performed in the fresh tissues and the prevention of an extension of the tear by the placental birth. In case a manual separation of placenta is necessary the sutures are loosened and held by an assistant, here also preventing an increased lesion.

Post-partum Psychoses.—Lucien Picqué (*Bull. de la Soc. d'Obst. de Paris*, No. 1, 1905) makes a distinction between those mental disturbances which arise directly after parturition and those which present themselves several weeks later. The former almost always accompany febrile states, while the latter are apyretic as a rule. In the latter class Picqué believes that there is often a mental degeneracy as a predisposing factor. He has made a special study of this affection and has introduced surgical methods in its treatment with some success. He found that in many cases there were conditions of the uterus which called for local treatment. Among these were polypoid degeneration of the mucosa and ulcerations of the cervix, which in one case called for an amputation. These amputations and curettages showed beneficial results in the mental affection in 9 out of 14 cases; 6 recovered completely; 3 were improved. In no case was an injurious effect upon the psychic condition as a result of the surgical procedures observed.

Serum Therapy of Puerperal Fever.—H. Peham (*Archiv f. Gyn.*, Bd. 74) records the results obtained in 44 cases. The serum used was derived from horses which had failed to yield a diphtheria serum of standard strength. For injection streptococci were obtained from cases of sepsis, peritonitis, puerperal processes and erysipelas. Only those cases were selected which gave a bad prognosis and in which streptococci could be demonstrated in the uterine secretions or in the blood. The injections were in no cases

made upon the first elevation of temperature, as a positive bacteriological result was desired, and also as it was at first feared that a case simulating a streptococcus infection might be unfavorably influenced. This delay in treatment had a decidedly bad influence upon the course of the disease. The injections were made into the inner surfaces of both thighs, 50 c.cm. of serum being injected into each. The author lays stress upon the value of large doses. The treatment was supplemented by intra uterine douches when indicated, hydrogen peroxide when ulcers were present, and in no case was the curette used. The effects of the serum were manifested in some cases by a sudden drop in temperature, while in others the return to normal was more gradual and accompanied by a gradual slowing of the pulse. In one of the patients suffering with pyemia and abscesses in all parts of the body the temperature dropped to normal, where it remained. This case seems to point out that the serum has antitoxic properties, in spite of the more modern conception that the streptococcus serum differs from the diphtheria serum in being bactericidal. There were 44 cases treated with a mortality of 13, one from embolism of the pulmonary artery, two others being tuberculous. The autopsies in these three cases were negative as regards a genital streptococcic infection. Among the 17 pure streptococcic infections there was but one fatal case of doubtful result. The serum produced in no case a more serious disaster than the production of an erythema, nor was there noted in any case an inflammation or the formation of an abscess at the site of inoculation. In one case there was slight pains in the joints. The following deductions may be drawn from the use of the Viennese serum: (1) The most severe puerperal fever due to streptococcus infection seem to be favorably influenced; (2) treatment should be begun as soon as possible and with comparatively large doses; (3) the serum is not injurious; (4) in infections of long standing the serum has no effect.

GYNECOLOGY.

Histology of Imperforate Hymen.—E. de Arcangelis (*Archivio di Ost. e Gin.*, November, 1904) removed a portion of the tissue at an operation in a case of imperforate hymen, and made a careful histological examination of it. He found that the external layer of the hymen was similar to the neighboring structures of the epidermis, and consisted of stratified pavement epithelium. The cells were long and placed upright in the outer layers. In certain parts of the hymen the epithelial layer seemed to push up into the connective tissue layer, and to even form small cavities, as if reaching out toward the internal epithelial layer. The internal layer presented an irregular surface, of the nature of cylindrical stratified epithelium, resembling that of the vagina and varying much in thickness. At certain points there were depressions, which seemingly reached down into the connective tissues toward the projections in the outer layer before mentioned. Between these two layers was a stratum of connective tissue, rich in nuclei, with some

muscular elements. The author believes that there is no doubt of the ectodermic origin of these epithelial structures. The differences between the epithelium covering the internal layer and that of the vagina he believes to be due to the abnormal conditions of function, and that they would become alike on the establishment of normal menstruation.

Innervation of the Female Genital Organs.—Jung (*Monats. für Geb. u. Gyn.*, January, 1905) has found in full term infants a large ganglion at the level of the vaginal fornix and cervix uteri in the connective tissue of the parametrium. It lies laterally at quite a distance from the uterus and vagina. Radiating from this are very numerous nerves with ganglia in both a caudad and cephalad direction, the former extending to the lower third of the vagina, and the latter to the ureter and bladder, under the peritoneum of the vesico-uterine fold and extending also to the posterior uterine wall. Jung found in the uterus itself large ganglia lying under the peritoneum. He claims that the cervical ganglion of the uterus does not represent a plexus, but a conglomeration of all the branches of the genital nerves. This ganglion has not the dimensions claimed for it by previous investigators, as its substance is largely composed of connective tissue. According to Jung's findings the entire vaginal structure as far as the muscular pelvic floor is interwoven with a fine network of nerve fibers interspersed with ganglia to a degree which had previously not been known to exist in the human subject. This peri- and para-vaginal plexus is in connection with the large ganglion above described. This network thins out toward the median plane of the body, as is also the case with the blood and lymphatic systems. Jung believes that in the act of parturition the stimulation of the child as it descends upon new nerve centers causes new impulses for uterine contraction.

Foreign Bodies in the Bladder.—P. von Kubinyi (*Zent. für Gyn.*, Nov. 26, 1904) reports a case of vesical calculus, the nucleus of which was a foreign body. The patient tried to relieve herself from retention of urine by catheterization, using a goose quill, which, not being long enough, slipped in. For about a year there were no bad results, and the patient relieved herself with a quill of proper dimensions, but hematuria, tenesmus and incontinence eventually appeared. The cystoscope showed a stone as large as a hen's egg, which was crushed and removed with its nucleus.

Calcification of the Fimbriæ of the Tubes.—G. A. Wagner (*Archiv für Gyn.*, Bd. 74) gives the autopsy findings in a patient 33 years old, whose death was apparently due to an uncompensated heart lesion. The autopsy showed a normal uterus; adnexa and parametrium free. The tubes were normal as far out as to the infundibula. The fimbriæ were dark red sprinkled with yellowish areas, which felt rough on account of numerous scale-like excrescences. When dilute sulphuric acid was added to one of these scales bubbles of gas were given off and calcium sulphate crystals were formed. The pathological condition was caused by a venous hyperemia, due to a severe cardiac disease.

Uterine Fibromyomata.—A. Pinard (*Ann. de Gyn. et d'Obst.*, January, 1905) states that the following facts should be recognized by all practitioners: (1) That fibroid disease is the most frequent to which the uterus is subject. (2) That these growths are of benign nature. (3) That they develop from all parts of the uterus. (4) That their appearance is unknown before puberty and their development does not occur after the menopause. (5) That most frequently the myoma is single. (6) Their development follows laws as yet unknown to us. (7) That they diminish in size after the menopause. Their increase in size during pregnancy is due simply to their taking part in a hypertrophy common to the uterus. Pinard believes that sterility is the important condition in the causation of the majority of fibroma. A maxim which he has impressed upon his students is to first examine for myoma when the patient is a primipera of 30 years or over.

Frequency of Hemorrhage in Fibroma of the Uterus.—Gulielimo Pace (*Annali di Ost. e Gin.*, December, 1904) bases his conclusions with reference to the occurrence of hemorrhage in fibroma of the uterus on a large number of cases from the hospital at Florence. They are as follows: In interstitial and subserous fibromata it is variable, occurring only when the tumor has attained some size, being rare in small tumors. In these varieties and in the submucous it is not severe, while in polypi it is marked. In 118 cases of interstitial tumors it occurred in 55 per cent., in 52 subserous in 50 per cent. In the subperitoneal form it is rare, absent if the tumor is pedunculated. In the infraligamentous it occurs as a long-standing menorrhagia; in the submucous it is constant, but comes on relatively late. Location, multiplicity and size exert no influence on the frequency; age has no influence. Near the menopause hemorrhage is less frequent, and at that period it is absent. Leucorrhœa is rare. Alterations in the adnexa have no effect on frequency; pain and hemorrhage bear no relation. In fibrous polypi of the cervix hemorrhage is considerable and lasts for years, beginning late. Absence of hemorrhage does not depend on aplasia or hypoplasia of the genital apparatus.

Systematic Ligation of the Iliac Vessels as the First Procedure in Abdominal Hysterectomy; Its Immediate and Remote Advantages.—Merletti (*Annali di Ost. e Gin.*, November, 1904) bases this proposition on the surgical conception of shutting off a circulatory region, which has become useless by the removal of the organs supplied. The anastomoses are the circumflex iliac, lumbar, circumflex, femoral and sacra media; these assure the nutrition of the tissues left. This procedure is easy of execution and not dangerous; it has these immediate advantages: Diminished hemorrhage, less need of drainage for hemorrhage from adhesions, less frequent secondary hemorrhage. The remote advantages are: It is a good prophylactic measure against post-operative embolism, it closes the way to septic and aseptic thrombosis and prevents thrombo-plebitis, which might retard cure.

Vaginal Ovariectomy.—Bürger (*Münch. Med. Woch.*, Dec. 6, 1904) has performed a series of vaginal ovariectomies and his results are so favorable that he is an earnest advocate of the technique. In this series of 50 cases the tumor was 13 times recorded as having the dimensions of a man's head. In 2 cases it was double this size, and in 6 it was described as multiple cystoma. Bürger says that the indication is pushed too far by some writers, who urge that in all cases a vaginal procedure is to be elected. Great care should be taken before the puncture of a cyst to protect the adjacent tissue from contamination with the pultaceous contents. The dermoid detritus and the colloid substances are very apt to cause serious disturbances, such as the production of contact metastasis and elevation of temperature. In cases of small tumors, which are still in the true pelvis and consequently lie posterior to the uterus, making them accessible with more difficulty, the writer recommends the posterior vaginal incision in order to come directly upon the lower pole of the cyst. In treating the peduncle silk ligatures were used. In 4 of the operations the angiotribe was employed, but with poor results, as secondary hemorrhage necessitated the application of sutures. In 84 cases of simple ovariectomy there were no fatalities. In 26 operations removing the uterus 3 cases were lost.

Technique of the Alexander-Adams Operation.—Fehling (*Zent. für Gyn.*, Feb. 11, 1905) cannot agree with Hecheisen in his claim that complications, such as cicatricial adhesions of crural nerve, thrombosis, etc., can be avoided by opening the inguinal canal in order to find the round ligament. According to Fehling complications are caused by the operator going too far laterally after making his incision. In 106 cases the writer has seen no such complications. He describes the following technique. A curved incision is made from a point midway between the anterior superior iliac spine of one side to a symmetrical point on the other, the curve passing over the spine of the pubis. The lateral portion of the incision is extended into the deeper tissue until the fascia of the external oblique muscle is exposed and the pillars of the inguinal canal are seen. At this point the dissection is carried on with an anatomical forceps and a hollow sound. Slight pressure upon the canal brings the ligament into prominence, as it emerges from the canal lying superficial and near the external pillar. When the ligament has been isolated it is drawn forward up to its peritoneal insertion. In doing this the writer has torn the ligament only once.

Prostitution in Helsingfors.—Axel Cedercrentz (*Finska Läkarsällsk. Handl.* January, 1905) says that girls are granted a permit which consists of a book giving a short biography of the person, and also stating the reason for adopting this profession. This book is a passport which must always be carried. Every prostitute must be examined once a week by a specially appointed physician, who stamps her book with the exact date of examination. There are several classes. The smallest fee for an examina-

tion is fifty cents for women of the second class, while about four dollars is charged the women of the first class. These women come to the physician for an examination. In case they wish to be examined at home they pay something over six dollars; but in these cases also the examination must be weekly. Any unmarried woman who is found by a practitioner to have syphilis is registered as a prostitute, and must report for examinations. More than 86 per cent. of prostitutes were found to be under 24 years of age, and over 40 per cent. were 18 or younger. Previous to becoming public women 53 per cent. had been servants, 11 per cent. factory hands, while 7 per cent. had never had any occupation.

DISEASES OF CHILDREN.

Shall We Use Raw or Cooked Milk?—Hermann Brunig (*Münchener Med. Woch.*, Feb. 21, 1905), answers this question by recounting the results of an experiment made on a family of four dogs. Two were artificially fed, one on raw and one on cooked cow's milk, one nursing the mother continually and one nursing for a week and then drinking cow's milk cooked. The last two both developed normally, the one who nursed all the time doing best. The animal that was fed on cooked milk did fairly well, weighing less than the other two, and having symptoms similar to human rickets. The animal fed on raw cow's milk did worst of all. He developed a nephritis and a tuberculosis of the intestinal tract. The author believes that this experiment tends to show the paramount value of mother's milk, as well as the dangers of raw cow's milk.

Anatomo-Pathological Alterations of the Liver in Congenital Infantile Syphilis.—Giovani Grassi (*Annali di Ost. e. Gin.*, Oct., 1904), treats of congenital syphilis in its pathological results, deriving his opinions from the careful study of five undoubtedly syphilitic children, seen in the Children's Hospital of Milan. He believes that syphilis is usually the cause of hepatic cirrhosis in children; but, at the same time, he admits that alcohol, infectious diseases, and other causes may produce it. He refers to a number of cases where it appeared to be of alcoholic origin in children who took alcoholic beverages as remedies for a long period. The author distinguishes between interstitial hepatitis in its diffuse form and a limited form, and adds a gummous form of hepatitis. There is always present a marked congestion of the liver and a dilatation of the capillaries. Usually several forms of lesions are found in the same liver. He finds large and small gummata, and some gummata in a state of degeneration. He states that the interstitial hepatitis of children differs from that of adults in the fact that the infiltration with connective tissue begins at the periphery of the vessels and follows the hepatic trabeculæ; that is, it is intracinous; in the adult form, it begins at the periphery of the acini, so that the acini appear to be encapsulated by new formed

connective tissue rich in bile capillaries. He believes that the finding of interstitial hepatitis makes the diagnosis of syphilis positive.

Congenital Muscular Atonia of Oppenheim.—G. Berti (*Rivista di Clin. Pediatrica*, Jan.), accepts the clinical and anatomical conception of this new disease of children, which is congenital, and consists of an absolute inaction of the muscular masses of the extremities, and sometimes of the trunk and neck. The muscles remain flaccid and without atrophy for months and years, then gradually improve. The basis of this condition seems to be rather an incomplete systematization of the anatomical functions of the striated muscle, rather than an alteration of the ganglion cells of the anterior gray columns. In the absence of cases that have come to autopsy we can only theorize as to the pathology of the disease. If hyperfunctionality in the cerebrum produces contracture, hypofunctionality must produce flaccidity. The lack of muscular tone is equivalent to a condition of dystrophy in the muscle. The author concludes that these cases are a part of the great group of dystrophies, and the congenital myatonia of Oppenheim must have a pathology similar to that of severe forms of subcretinism and myxedema.

Pyloric Stenosis in Infancy.—H. L. K. Shaw and A. W. Elting (*Archives of Pediatrics*, Dec., 1904), report a case of pyloric stenosis successfully treated by anterior gastroenterostomy at the age of eleven months. The diagnosis was based upon incessant vomiting, dilated stomach, constipation, absence of bile in the vomitus, and steady loss of weight. The pyloric lumen appeared greatly reduced, the pylorus firm and thickened. There were no adhesions about it and no evidence of an inflammatory process. The literature up to August, 1904, shows 66 cases of pyloric stenosis in infants under 12 months, in which the diagnosis was confirmed by autopsy; 12 in which no autopsy was reported; 27 diagnosed as such but ending in recovery; 40 in which a surgical operation had been performed; 145 cases in all. As these are nearly all reported by specialists, it is fair to presume that in many cases considered as marasmus this has been the underlying cause. If the hypertrophy were congenital and primary, the vomiting ought to commence soon after birth, but in reality it rarely does so until several weeks later. Ballantyne has never seen hypertrophical pylorus in the fetus. Neither does the theory that the entire symptom complex is produced by spasm of the pylorus without hypertrophy or stenosis explain the 86 cases in which the pylorus was found greatly thickened at autopsy. The most plausible view is that the hypertrophy is secondary to overaction of the pylorus due to increased nervous irritability or hyperacidity. The characteristic symptom complex is: uncontrollable, long-continued vomiting, without symptoms of indigestion, dilated stomach, lax and sunken abdominal walls, obstinate constipation, emaciation, and, perhaps, a palpable pyloric enlargement. Only 27 out of 104 cases treated medically recovered, a mortality of 72 per cent.;

17 of 39 treated surgically did so, a mortality of 56 per cent. Medical treatment includes feeding frequently and washing out the stomach once or twice a day, undiluted cow's milk and citrate of soda if hyperacidity exists, small doses of cocaine before each bottle, and high rectal irrigations with normal saline solution to supply fluid to the tissues and remove hard feces. Of surgical procedures, pyloroplasty and anterior gastroenterostomy are the best.

Johann Schmidt (*Münchener Med. Woch.*, Feb. 14, 1905), discusses two cases of pyloric stenosis in infants. They both occurred in babies three weeks old, strong and healthy. A diagnosis of pyloric stenosis must depend upon the following symptoms: copious vomiting, not colored by bile, in well developed children, shortly after nursing; evidence of severe pain; decreased secretion of urine; loss of weight; peristaltic movements in the epigastrium, visible through the abdominal walls, and palpable by the hand; the palpation of a tumor in the pyloric region. The treatment is unsatisfactory, and only an operation can relieve the condition.

- **Recurrent Vomiting** is the name preferred by B. K. Rachford (*Arch. of Pediatrics*, Dec., 1904), for the affection called also cyclic, lithemic, periodical, and bilious vomiting. The majority of the cases occur in infancy and childhood, usually between 3 and 10 years. Heredity is the most important predisposing factor. A family history of migraine or gout is the rule, often one of neurotic inheritance, sometimes of recurrent vomiting. Nearly all are constipated, and the liver is functionally incompetent. Mental overwork and excitement with indoor life and poor ventilation predispose. It is a disease of the hereditary rich and refined. The writer considers it an autointoxication produced by toxins closely related to or identical with the purin bodies, while a secondary acid intoxication may also occur. Exciting causes are mental and physical fatigue, excitement, emotions, overeating, or use of acid fruits, berries, vegetables and wines, intestinal toxemia, and reflex irritation from intestines, eye, nasopharynx, and genito-urinary tract. The chief symptom is vomiting, becoming severe, with nausea, vomitus often bile. Vomiting usually ceases suddenly in 1 to 6 days, and within 5 or six days the patient is taking ordinary food. There are often no gastric symptoms until another attack, usually in 2 to 6 months, though gastrointestinal disturbances are not uncommon in children under 5. During the attack there are obstinate constipation, thirst, emaciation in severe, protracted cases, fever in nearly every case under 10 years of age. The last occurs early, runs from 101° to 105° F., and usually subsides in a few days. Pulse is irregular as a rule, and rapid; respiration sighing or rapid and panting; tongue coated, later dry, breath has odor of acetone. Narcotism is not uncommon. Gastric pain is not present during the attacks in children. Nervous excitability is usual. The urine is like that in migraine. The diagnosis is chiefly from toxic gastritis and intestinal obstruction. The prognosis is usually good. In four of the writer's

cases these attacks were changed into migraine in later life. The treatment of the attack is: calomel gr. $\frac{1}{4}$, with sodium bicarbonate gr. v every half hour for 8 doses, followed in 2 or 3 hours by a saline laxative and 4 or 5 hours later by benzoate of sodium gr. iii-vi every 2 or 3 hours, dissolved in essence of pepsin and peppermint water. No food; water by mouth if retained. If food and water are not retained by stomach, give high rectal enemata of normal saline solution or sodium bicarbonate $\mathfrak{ss}$ to water Oj every 8 to 12 hours. The soda neutralizes acids, removing or preventing secondary acid intoxication. Subcutaneous injections of normal saline solution for prostration, and of morphine gr. 1-20 to 1-10. Between attacks, out-of-door life, avoidance of all excitement, fatigue, and excessive eating, also of raw fruits, acid vegetables, salads, tea, coffee, beef-juice, beef-tea, and alcohol, with restricted beef and sweets. Constipation must be controlled with sodium phosphate or sulphate, later with rhubarb or cascara. General massage is good. The writer gives sodium, salicylate, and sodium benzoate, with essence of pepsin and peppermint water after meals for months, and later once a day.

Chronic Intestinal Dyspepsia of Children.—J. Brunton Blaikie (*Edinburgh Med. Jour.*, Sept., 1904), calls attention to a common affection of children, which is described in few standard medical works. His study is based upon 50 fairly typical severe cases observed chiefly at the Out-Patient Department of Great Ormond Street Children's Hospital. Regarding etiology, he shows that the disease is common in the poor, but by no means limited to them. The majority came from London and its suburbs, but apparently city life has little influence in causation. The disease affects special families. It occurs chiefly during the years spent in school. Constipation is probably a symptom rather than a cause. Preponderance of carbohydrates in the diet may be a strong causal factor. The majority have bad teeth, and septic matter from these may predispose to the disease. The latter occurs at the time of the second dentition. The male sex is more often attacked. Three-fifths of the cases were between the ages of 5 and 8, the number diminishing rapidly before the twelfth year, so that it is probably rare after that age. Dietetic errors, especially excessive carbohydrate ingestion, the nervous element, excess of brain work with diminished fresh air and physical exercise in school life are probably the chief causes, while overcrowding, town life, bad teeth, second dentition, measles, and whooping cough apparently exaggerate it. The symptoms are chiefly languor, excitability, nocturnal restlessness, headache, slight cough, epigastric or hypochondriac pain not affected by ingestion of food, loss of weight, deranged appetite, frequently irregularity of the bowels, usually with normal stools, sometimes containing mucus, rarely with flatulence, often with intestinal worms. Constipation and diarrhea may alternate, especially in cases with gastric fever. Vomiting and jaundice are not common, but at-

tacks of pallor and cold hands and feet are so. Loss of weight, dry skin, slight anemia, absence of jaundice, carious teeth, high and narrow palates, especially with adenoids, chronic pharyngitis, rarely abdominal prominence, are the rule. The disease is often mistaken for tuberculosis. It is probably never fatal, but predisposes to such a result in other illnesses by diminishing the resistance. The most effective treatment is change of air and surroundings; restriction of carbohydrates, indigestible food, regularity of meal hours, use of food leaving a residue in the intestine, and light evening meal are important. General hygienic measures, avoidance of excitement, and sometimes absence from school are beneficial. Alkalis, oleonesius, and bitter tonics are the most useful drugs. Rhubarb and soda, gray powder, aloes, tincture of myrrh, bismuth for epigastric pain or diarrhea, are recommended, with suitable treatment of symptoms.

Gastro-intestinal Toxemia.—This condition, says B. K. Rachford (*Arch. of Pediatrics*, Sept., 1904), is a systemic intoxication produced by poisons formed in and absorbed from the gastro-intestinal canal, as is to be distinguished from autointoxication in which the autotoxins are excreted into it and subsequently absorbed. Bacterial fermentation is the great source of intestinal toxins. Constipation is the more important predisposing factor of both acute and chronic intestinal toxemia. Others are too much food, indigestible food, food that has already undergone bacterial fermentation, lack of fresh air and exercise, and digestive idiosyncrasies, such as are shown by urticaria after taking milk, eggs, oatmeal, shell-fish, strawberries, acids, and wines. Systemic intoxication may also be caused by failure of the liver to filter the poisonous blood in the portal vein or a great excess of intestinal toxins which overwhelm the liver and enter the general circulation. Chronic appendicitis is a cause more common in adults. Acute intestinal toxemia is more common in the infant and young child than in the adult. In children it is so common that this cause is to be suspected when there is a sudden rise of temperature and acute convulsive disorders without apparent reason. The nervous symptoms resulting from acute intestinal toxemia may vary in severity from slight fever with exaggerated reflexes to high fever and convulsions ending in death. Even severe convulsive forms are relieved by catharsis, intestinal antiseptics and proper diet. Chronic intestinal toxemia may be associated with diarrhea, but is often so with constipation. Constipation may exist even when the child has two or three stools a day, as these may be only fragmentary or hard and dry, showing prolonged retention. Chronic intestinal toxemia is probably a factor in the production or aggravation of a large group of nervous and other symptoms, such as malnutrition, anemia, headache, malaise, fever, convulsions, night terrors, general irritability, incontinence of urine, hysterical and neurasthenic symptoms, bradycardia, hyperesthesia, paresthesia, psychoses, etc. Either the

acute or chronic type often complicates such diseases as malaria, tuberculosis, chronic gastrointestinal diseases, and, especially, in typhoid. In the last the fear of cathartics is often prolonged into convalescence and prolongs this many weeks by causing fecal accumulations and toxemia. The presence of an excess of indican and the ethereal sulphates in the urine is a valuable evidence of the existence of intestinal toxemia. Intestinal worms may be a cause of severe nervous symptoms, not necessarily by themselves excreting the toxins, but by causing secondary fermentation and possibly by reflex and mechanical action.

Bronchial Asthma in Infants and Children.—The analysis of 43 cases in infants and children under 12 years, by L. E. La Fetra (*Arch. of Pediatrics*, Dec., 1904), contains a number of points of interest. He found 1 case to about every 25 of bronchitis at the Vanderbilt Clinic. In 19 of the 43 cases the symptoms appeared within the first 2 years of life. There was not an Italian and were only 2 negros among the cases, although rachitis might have been considered an important predisposing factor. Of the 43 cases, 27 had had some respiratory inflammation preceding the attacks of asthma. The attacks were said to occur daily or with no stated intermission in 8 cases; in the others they occurred from every 2 weeks to every winter or every summer. In all but 2 the attacks were worst at night; in 3, when on the back, one of these having a large thymus. Three were worst in summer, the others in winter. Emphysema alone complicated 10 cases; emphysema and bronchitis occurred in 5. Adenoids were present in 47 per cent. Asthma in infants may simulate bronchopneumonia or a fine bronchitis in their early stages, but low temperature and whistling râles flitting from one part of the lungs to another suggest the real diagnosis. If such symptoms follow or accompany gastric indigestion, urticaria, or attacks of sneezing, asthma is the more probable. Eosinophilia, speedy recovery, and later recurrences confirm the diagnosis. Most cases are due to spasmodic contraction of the smooth muscle fibers of the smaller and medium-size bronchi, but some to vasomotor turgescence. The writer emphasizes the importance of prophylactic measures in asthmatic families: early treatment of bronchitis, removal of adenoids and enlarged tonsils or other nasal growths and removal of the exciting cause when ascertainable. Constitutional treatment is most necessary. Cod liver oil, quinine, or arsenic, sodium iodide in cases of long standing. Dunbar's pollantin in those with hay asthma, and in rheumatic subjects, or those with eczema or urticaria, regulation of diet, sodium phosphate or salicylate, and calomel in divided doses, monthly or more often. For the attack: for infants, inhalation of steam from creosote gr. xx in water Oi; for older children, nitrate paper with or without stramonium. As soon as the infant can swallow, zinc tartar emetic, gr. 1/100, with ipecac, gr. 1/20, and nitroglycerine, gr. 1/100, or 1/50 every half hour, for 2 or 3 doses, or atropine gr. 1/2000

every 2 hours, until the face flushes. If there is gastric indigestion empty the stomach by syrup of ipecac. For long-standing cases, and in older children, give a mixture of potassium iodide, morphine sulphate, tincture of belladonna, and Hoffmann's anodyne every 3 or 4 hours. For vasomotor turgescence adenalin or suprarenal extract instilled into the nose may benefit.

Lobar Pneumonia in Infancy.—John L. Morse (*Arch. of Pediatrics*, Sept., 1904), has analyzed 118 cases of lobar pneumonia in infants occurring among 1,900 cases admitted to the Infants' Hospital of Boston. He finds the disease more common and relatively more frequent in comparison with bronchopneumonia than is usually supposed. The outset was less stormy than is generally thought, rarely with a convulsion, often with vomiting, usually with fever and cough, which were frequently accompanied with apathy or drowsiness. Movement of the alenasi was not a constant symptom. A whole lobe was more often involved than a part. The left lower lobe was most frequently the site of consolidation, then the right upper and right lower. The portion of the lungs involved was relatively the same in fatal cases as in those which recovered; but the area involved was usually larger in fatal cases. The average duration of fever in cases that recovered was about 8 days; but the course was more often short in the first year than the second. In uncomplicated fatal cases the average duration of fever was 12.8 days. The highest temperature was usually 103°-106° F. It fell by crisis in 68.8 per cent. Crises were less common in the first than in the second year. Collapse during the crisis was rare. Pseudocrises were not very common, but irregularities and remissions in temperature were not unusual. The mortality was highest in cases in which the temperature rose above 106° F., lowest in those in which it did not exceed 103° F. The degree of fever between these extremes did not appear to affect the mortality. A high fever was no more fatal in the second year than in the first. The usual pulse rate was 150-170. No case died in which the pulse was not over 140. The pulse rate if above 40 had little or no apparent influence upon the mortality. Respirations were usually 55-80. No case with respirations below 55 died. The frequency of respiration above 55 appeared to have no effect on mortality. Excluding cases in which death was due to empyema, the mortality was nearly 23 per cent., being nearly twice as great, 32 per cent., in the first year as in the second, in which it was 18 per cent. The most common complication was otitis media, occurring in 18 per cent. The next in frequency was empyema, in about 8 per cent. From these facts are deduced the following points regarding prognosis. It varies, in infancy, with the age and somewhat with the extent of lung involved. It is good if the temperature does not pass 103° F., serious if above 106° F., while variations between these extremes do not affect prognosis. It is good when the pulse is not over 140 or respiration over 55, the amount of increase above these limits being of little importance.

Acute Articular Rheumatism in Children.—Adolf Baginsky (*Berliner Klin. Woch.*, Nov. 21-28, 1904) gives a résumé of 66 cases seen by him, from 1899 to 1903, in hospital practice, and 73 cases collected by his assistant from the records of cases under 14 years: that is, 139 cases in all. As to etiology, he states that sex has no influence; age gives some interesting considerations: there were no cases under one year; from birth to the 5th year there were 5 cases; from 5 to 10, 32 cases; from 10 to 14, 29 cases; thus we see that the disease predominates during the time of greatest growth and during the advent of puberty. This has been thought to be a disease of the cooler portion of the year, but the author has found that there were more cases from April to September than during the rest of the year. Heredity played a part in 12 of the cases. The writer thinks that in private practice he has observed many cases where the rheumatic child had parents with heart disease. He found that affections of tonsil and pharynx accompanied or preceded the attack of joint trouble in 9 out of 66 cases; and in many cases where the pharynx was pale and apparently normal, streptococci were found in the pharynx. Trauma he lays no stress upon in this relation. The disease begins with severity; marked pain and swelling of the joints, high fever, vomiting, nose-bleed, headache, prostration; but these symptoms are soon over, and yield easily to salicylates. The author gives two forms: the transient, with little involvement of internal organs, and no relapses, and another with early heart involvement, and recrudescences of joint trouble, and ending in heart lesions. Of these, some are malignant from the first, and terminate in death; the rest end in chronic heart lesions. The joint symptoms are less severe than in adults, and rarely become chronic. The pain is markedly severe. The large joints of the lower extremity are most often involved, but any joint may be affected, even hip, jaw, and spinal articulations. As to the temperature curve, the use of salicylates and anodynes prevents the detection of any typical form. In some cases there is a morning remission and afternoon rise, suggesting streptococcus infection. Sweating is rare. Anemia appears to be marked, with a very white face, but this seems to be due to a lack of blood in the surface blood-vessels, rather than to real blood changes; the blood is nearly normal. Lung symptoms he has observed only in connection with cases due to cold bathing, and the bronchial symptoms do not seem to be due to the rheumatic poison. The intestinal symptoms are only such as are observed in connection with fever. Albuminuria is rare. Of nervous symptoms, chorea alone seems to be connected with rheumatism, and this does not occur in the acute attacks. The severe nervous disturbances, delirium, etc., he has never seen, and believes them to be due rather to cerebrospinal meningitis than true rheumatism. Otitis and lymph gland swellings are rare. The chief characteristic of acute rheumatism in children is the early and frequent heart affections. Of



his cases, 12 per cent. had heart unaffected; 23 per cent, affected, cured; 62 per cent., permanent lesions; 10 per cent., fatal. The symptoms are irregularity of heart action, diffuse cardiac impulse, frequent pulse, 120-160, and arrhythmia. Endocardium, pericardium, pleura may be all inflamed. There is marked inclination to fibrinous pericarditis, leaving immense thickening of the pericardium, with hyperplasia of the myocardium and atresia of a pericardial sac a finger thick, the overacting heart being held as in a vice. Endocardial changes are less frequent, with crippled valves. Degeneration of the heart muscle, and fatty changes may result. The most important consequences are in the heart. Chronic rheumatism is rare. The author thinks it is the result usually of a hidden syphilitic taint. It occurred only once in this series of cases. The form accompanied by tuberculosis, mentioned by French authors, Baginsky believes to be purely tubercular. Aspirin and other salicylates relieve the joint symptoms. As to the heart symptoms, the author has found nothing to give satisfactory results. He has tried all the usual drugs, and finds some satisfaction in a few cases in the use of potassium iodide. Vesication, leeches, etc., are useless.

Manifestations of Rheumatism in Childhood.—James Burnet (*Brit. Jour. of Children's Diseases*, Sept., 1904) cites several cases of rheumatism with a pronounced family history of the same trouble, as indicating that the hereditary factor must not be ignored. Pharyngitis and tonsillitis deserve to be more frequently regarded as rheumatic than they are at present. Tonsillitis is said to be more common in the rheumatism of adolescents and of adults, but pharyngitis in the child should always be looked on suspiciously, the heart examined, and the child kept in bed until the diagnosis is certain. The writer even speaks of pneumonia as possibly sometimes rheumatic, as one of his cases of the disease developed chorea subsequently. Psoriasis rarely occurs, in childhood at least, save in rheumatic subjects; and that it is a rheumatic manifestation is supported by the benefit which may result from antirheumatic remedies. Appendicitis also comes into the writer's group of rheumatic affections in not a few cases. He also believes that cases of so-called gastroenteric spasm, in which the child complains of acute gastric pain after a meal and has an urgent call to stool, are often of rheumatic origin. Pain in the side or in the upper part of the chest is also considered to be a manifestation of rheumatism. Children of rheumatic heredity do not always present any definite signs of the disease, but are often nervous, irritable, sensitive, thin, subject to fits of violent temper, of a restless disposition, constantly looking for fresh amusements. When this nervous restlessness reaches a certain maximum point it becomes associated with muscular movements, which, beginning in slight twitchings, gradually increase until a true chorea is established. The treatment advised for rheumatism is aspirin or sodium salicylate gr. x every 4 hours for several days, for a child

of 5 years, calomel gr. ss-i 3 times a day, ice-cap over precordia for cardiac symptoms, and codliver oil in convalescence.

Acute Myocardial Insufficiency.—F. Forchheimer (*Arch. of Pediatrics*, Sept., 1904) says that the importance of this subject lies in the development of a large number of the cases in connection with scarlatina, diphtheria, rheumatic fever, septicemia, typhoid, and pneumonia. Idiopathic dilatation of the heart is probably not so common as was formerly supposed; the basis of such dilatation is probably myocardial change. The development of symptoms of acute myocardial insufficiency depends upon the amount of damage to the myocardium. In a number of cases no symptoms develop; in a much larger number they appear after the febrile period, sometimes being postponed indefinitely; in some they are so great as to be manifested during the febrile period. The symptoms are diminution in heart force, arrhythmia, then signs of dilatation of the left heart, then of the right, with those of relative insufficiency of their valves, and marked enlargement of the liver when the right heart is seriously affected. The left heart is usually affected first, unless a particular cause, such as whooping cough, affects the right. Diphtheria, of all acute infections, most frequently produces myocardial insufficiency. Septicemia of influenza, due to secondary infection, with pyogenic bacteria in case of influenza, stands second in frequency, and the insufficiency in scarlatina, typhoid, and rheumatic fevers is rare in children. For uncomplicated myocardial insufficiency the first principle is absolute rest. Predisposing causes should be controlled. The digitalis group of drugs may be used. Stimulants, from alcohol to camphor and ether, are required in most cases. Convalescence must be guarded, and mechanical means of strengthening the myocardium, such as Swedish movements and massage, are recommended. Diet as in all myocardial affections. Violent laxatives should be avoided. Strychnine may be used for its general tonic effect. Nitroglycerin should never be used, unless there are anginous attacks. For vasomotor paralysis the writer uses hypodermatic injections of adrenalin every two hours, saline infusions at first, ice bags over the abdomen. After the most violent symptoms have passed off sodiosalicvlate of caffeine is given every two to four hours, alternating with the adrenalin, which is gradually dropped.

Measles Without Any Rash.—Salzer (*Münchener Med. Woch.*, Feb. 21, 1905). describes the first case of measles without any rash that he has seen in a practice of fifty years, during which he has handled many hundred cases of the disease. It occurred in a family of six children, in which there were two sets of twins. In four of the children typical cases of measles developed. At the same date on which three of the twins sickened, the fourth, a puny baby a year old, who at birth weighed only $3\frac{1}{4}$ pounds, and at the time of the sickness only 13 pounds, was attacked by a severe bronchitis, temperature of 40° C., lasting two weeks. No

trace of rash could be found on the skin, though the child was carefully examined twice a day, and mustard baths were given. The cough was severe, and vomiting marked. When the temperature fell, convulsions ensued, and the child died.

Icterus Neonatorum with Purpura.—As an illustration of the danger of attempting blood examinations in purpuric children, J. E. Talley (*Arch. of Pediatrics*, Sept., 1904) describes a case of icterus neonatorum with purpura, in which an ordinary puncture was made in a great toe in order to obtain the necessary blood. Bleeding from this wound persisted for a week in spite of all efforts to arrest it. Mousell's solution locally and calcium chloride internally appeared to give the best results, although the latter was given after the administration of adrenalin and gelatin. Suprarenal extract seemed to check best the development of new petechial.

Bilateral Separation of the Lower Epiphysis of the Radius.—A case of this injury, due to falling on the outstretched hands, is reported by J. W. T. Walker (*Brit. Jour. of Children's Diseases*, Aug., 1904). The patient was 15 years old. Anterior splints were applied and removed 3 weeks later, when there was found to be silver-fork deformity with backward displacement of the lower radial epiphyses and firm union with the shafts in this position. Seven weeks later the deformity was less marked and movements of the wrist joints were perfect. The deformity in these cases usually disappears completely. The serious question of the arrest of growth of the shaft of the bone with consequent distortion of the limb must always arise in these cases. There is no very precise knowledge of the factors which govern the arrest of growth in separation of the epiphyses. Severe comminution, destruction of the soft parts, and suppuration are naturally followed by impaired activity of the injured epiphysis, but in simple detachment of the radial epiphysis the after result varies considerably. The radius has been stunted in growth after simple separation with little or no displacement, and in other cases, where the epiphysis has been completely displaced, the injury has not interfered with the full development of the bone. It is, therefore, impossible to say in a case like that just described whether arrest of growth with its serious deformity may not take place.

Glycosuria in Children.—Heinrich Stern (*Arch. of Pediatrics*, Aug., 1904), says that diabetes mellitus probably does not occur in nurslings. In children under 12 years of age it is nearly always fatal. Non-diabetic glycosuria is of more frequent occurrence than is usually supposed, comprising, in fact, the majority of cured cases of supposed diabetes. It usually causes no, or slight, constitutional symptoms, and, if uncomplicated, is often permanently cured.

Chronic Alcoholism in Infants.—Guido Berghinz (*Rivista di Clin. Pediatrica*, Jan.) calls our attention to the frequency of alcoholic symptoms of a chronic type in infants and young chil-

dren in countries where beer, wine or spirits are used habitually at the table. He has observed cases of persistent insomnia, psychic disturbances, and nervous excitation in babies of two to three years old. Diurnal enuresis was observed in a child of seven, which ceased when the use of alcohol was stopped. He details a case that came to autopsy, in a child of five years, as a result of acute nephritis. The father and mother were alcoholics. The child habitually drank aquavita. When the child entered the hospital he had advanced general edema, and dyspnea from hydrothorax, after an illness of two weeks. The urine was scanty and contained albumin and casts. The child was exceedingly thirsty and constantly called for aquavita. He lived only two days, dying of uremia. The autopsy showed interstitial nephritis, hypertrophy of the heart, beginning cirrhosis of the liver and generalized endarteritis, all the result of chronic alcoholism. There were no other etiological factors to be found. This case corresponds with those observed by Kassowitz and others, in which nephritis resulted from chronic alcoholism.

Percussion of the Skull.—McEwen's sign is the finding by percussion of a tympanitic note over the plerion, the base of the frontal bone and the squamous portion of the parietal bone, that is, over the horn of the lateral ventricle. It is considered by Henry Koplik (*Arch. of Pediatrics*, Sept., 1904), one of the most useful signs of fluid in the lateral ventricles in various forms of meningitis, especially of the tuberculous type, and in tumors at the base of the brain. The patient must assume the sitting position while this sign is sought, otherwise error is inevitable. From earliest infancy it may be obtained in the recumbent position or when the head is hung far toward the side percussed, especially in rachitic subjects. In cerebral meningitis and forms of suppuration with an accumulation of fluid over the external portion of the brain and cerebellum, as well as in the subarachnoid space, the percussion note is dull, not tympanitic. One of the most useful differential signs between the tuberculous and cerebrospinal forms of meningitis is that in the former the serous fluid in the ventricles gives the McEwen sign as compared with the rather dull note obtained in other forms of meningitis.

Hydrocephalus. Drainage of Ventricles Into Subdural Space.—Following the suggestion of Watson, Cheyne and Sutherland, Charles A. Morton (*Brit. Jour of Children's Diseases*, Sept., 1904), treated a case of hydrocephalus in a child of seven months by permanent drainage of a lateral ventricle through a rubber tube into the subdural space. This communication was made in order that the fluid might be absorbed by the meningeal veins. Soon after the operation the head began to enlarge, and six weeks after it was larger than before. The operation was repeated on the other side, but leakage of cerebrospinal fluid continued through a tiny opening in the skin wound, and death occurred ten days after operation.

THE AMERICAN
JOURNAL OF OBSTETRICS
AND
DISEASES OF WOMEN AND CHILDREN.

VOL. LI.

MAY, 1905.

NO. 5.

ORIGINAL COMMUNICATIONS.

THE TECHNIC OF ABDOMINAL AND VAGINAL OPERATIONS FOR THE RELIEF OF FIBROMYOMATOUS TUMORS OF THE UTERUS.*

BY

J. RIDDLE GOFFE, M.D.,
New York.

Professor of Gynecology at the New York Polyclinic, Visiting Gynecologist to the New York City Hospital, etc.
(With Four Illustrations.)

THE operation for the removal of large fibromyomatous tumors of the uterus constitutes one of the most formidable procedures in surgery. The early opinion and indeed the classical teaching, even down to our own time, has been that fibroid tumors of the uterus are in themselves benign growths which may not produce any symptoms, except those of pressure as they increase in size. That at times they cause hemorrhages or pain, and not infrequently both, that after the menopause they become smaller and sometimes disappear. The result of this estimate of the pathological aspect of a fibroid tumor case, was that they were never

*Read at the meeting of the Washington Obstetrical and Gynecological Society, January 20, 1905.

attacked surgically until they had attained extraordinary dimensions. The disastrous consequences that followed surgical intervention at this stage of development, was a great deterrent against operation, and a woman's condition had to become desperate before relief was invoked. The early abdominal sections for fibroid tumors were made under the misapprehension that the operator was dealing with an ovarian cyst—an error in diagnosis—and when the mistake was discovered the abdomen was hastily closed. As I have said in a previous article, the description of such skillful surgeons as Lizars, Dieffenbach, Atlee, Baker, Brown and others, no longer ago than 1850, recoiling before the formidable task of removing a fibroid uterus, and closing the abdo-



Fig. 1. Ligation of Broad Ligaments and Formation of Posterior Flap.

men without operation, presents a strange picture to the advanced surgeon of to-day.

The man who first had the courage to deliberately plan and successfully execute hysterectomy for fibroid tumor of the uterus, was our own countryman, Kimball,¹ of Lowell, Mass. This was in 1855. The method of dealing with the pedicle, which most naturally suggested itself was the one that had been used successfully in dealing with ovarian cysts, and that was the method which Kimball adopted. After ligating the broad ligaments the uterus, including its peritoneal covering at its cervical junction, was transfixed and tied on either side with a double silk ligature and cut away. The ligatures were left long and brought out at the lower angle of the wound. The stump was then dropped

¹ *Boston Medical and Surgical Journal*, 1855.

and a glass drainage tube was inserted. The patient made a good recovery, but two other patients on whom he applied the same method died, one from hemorrhage, and the other probably from sepsis, and we hear no more of his efforts in this direction. A few bold operators, here and there, in the years that followed, made similar attempts to deal with uterine fibroids, but with little system and with melancholy results. Death came from suppuration of the stump. To prevent absorption from this source, Pean the French surgeon, introduced the method of dragging up the stump and fastening it in the abdominal wound. Koeberle, Kaltenbach and Hegar practised this method, and devised all sorts of mechanical contrivances for ligating the pedicle and fastening



Fig. 2. Covering Over Stumps by Flap.

it in the abdominal wound. The *serre-nœud*, transfixion pins, wire *ecraseurs*, are among the now abandoned instruments of torture devised by these men.

The success attending the intraperitoneal treatment of the stump in ovariectomy, was a constant incentive toward placing the disposition of the stump, after hysteromyomectomy, upon the same footing as that of an ovarian cyst. Many methods were devised but they contributed little to the permanent development of the procedure, and one by one dropped out of use. Carl Schröder's name will always be associated with the intraperitoneal treatment of the stump which he elaborated and which was long regarded as an ideal procedure. It was characterized by ligation of the broad ligaments down to the cervix, a wedged-shaped incision in cutting away the tumor mass, and the use of successive layers of buried catgut sutures in the cervix itself.

His success was phenomenal and yet his high death rate, 30 per cent., was sufficient to prevent the general acceptance of his method by the profession. No ligature was placed on the uterine arteries; the sutures were not sufficient to control the blood supply, and he lost his cases from secondary oozing into the stump and infection of the peritoneal cavity.

Martin and Zweifel employed this method, each in his own modified form, with varying success. Martin, by the use of a temporary elastic ligature and drainage of the pelvic cavity with a rubber tube passed through Douglas' pouch into the vagina, succeeded in reducing the death rate to 22 per cent. Zweifel abandoned the buried tier suture in the cervix and substituted a continuous chain suture down the broad ligament on either side and across the neck of the uterus. The procedure embraced the temporary elastic ligature, the wedge-shaped incision of the stump and the suturing of the peritoneal edges. But his chain ligature across the cervix transfixed the peritoneum and so afforded means of escape into the peritoneal cavity of oozing from the pedicle and consequent sepsis. However, in 1888, he reported a series of 10 cases with only one death, and in 1889 a series of 22 successful cases.

In the meantime electricity was being pushed forward as a means of cure without operation, and further efforts at perfecting the intraperitoneal treatment of the stump had been about abandoned, except by a few operators. It was during this quiescent stage that I had the opportunity to devise and develop a modification of the Schröder method. My first operation was done May 29, 1888, and the method was published to the profession in the *AMERICAN JOURNAL OF OBSTETRICS*, April, 1890, with the report of a series of 4 successful cases. The characteristic features of the operation are: First, the making of large distinct peritoneal flaps from the anterior and posterior faces of the uterus, with which the stump and the severed ends of the broad ligament are covered and buried beneath the peritoneal cavity; second, the transfixing of the stump inside these flaps so that there is no puncture of the peritoneum; third, utilizing the cervix as a drainage tube in case of suppuration under the flaps. Schröder, in his superimposed stage suture covered the stump, but his cone-shaped flaps were nowhere free from uterine tissue. This is of importance in securing the peritoneal cavity against infection, and I regard the formation of distinct peritoneal flaps devoid of uterine tissue, as a decided advance in the procedure.

One point in the technic has been improved since my early operation. This consists in transferring the ligature from the cervix to the uterine artery which is ligated on either side in continuity, no ligature being placed upon the cervix itself. The technic, as I employ it to-day, is as follows: After opening the abdominal cavity, and while the tumor is still *in situ*, the ovary and tube upon one side are drawn up and a ligature is passed through the upper border of the broad ligament and tied, thus controlling the ovarian artery; one end of this is rethreaded into the pedicle needle, and the broad ligament is transfixed a second time near to the tumor and just above the uterine artery. This is also tied. A temporary ligature is now placed near the horn of the uterus to control any reflex hemorrhage from the tumor.



Fig. 3. Operation Finished.

The broad ligament is cut down to the lower point of transfixion, and the tumor is then rotated and the same method pursued on the other side. The tumor is then delivered through the wound, and the lower angles of the incisions through the broad ligaments on either side are connected by an oval incision through the peritoneum, first across the anterior and then across the posterior surface of the tumor. The flaps are then dissected down, the one in front carrying the bladder and ureters into safety. One end of the ligature is again threaded into the pedicle needle and is passed inside these peritoneal flaps close to the cervix and below the uterine artery. This is repeated on the opposite side and the ligatures cut short. The tumor is then cut away on a level with the internal os. The cervical canal is disinfected with appli-

cations of carbolic acid. The flaps are then stitched together with a running catgut suture over the top of the stump, care being taken to make them cover all the ligatures on either side. I use catgut ligatures on the broad ligaments and also for stitching the flaps. The advantage of using a single ligature for each broad ligament is that it puckers up the end of the ligament and carries it down alongside of the cervix, so that the raw surface is very easily covered by the peritoneal flaps.

In a general way the advantages of this operation and the superiority over the method of total extirpation consist in the following points:

1. It involves the least possible loss of blood; indeed, it is rare for any hemorrhage to occur.

2. It is easy of execution, for the reason that the stump of the cervix can be brought up near to the abdominal wound and the details of disposing of the traumatic tissue carried on with ease and comfort to the surgeon.

3. It is applicable in its general plan to all cases of fibroid tumor.

4. It requires less time than total extirpation.

5. Convalescence, as a rule, is rapid and free from complication. Moreover, the patients require no special after-treatment whatever. It is not necessary to put gauze in the cervix or in the vagina, consequently there are no dressings to be attended to. The after-treatment consists in regulating the functions of nature and removing the stitches from the abdomen. The open-bowel treatment is employed, and as a rule the patient urinates without assistance.

Dr. Haywood Smith, of London; Dr. H. N. M. Milton, of Cairo, Egypt, and Dr. Baer, of Philadelphia, have contributed, independently of each other, the suggestion of ligating the uterine artery in continuity.

Zwiefel has adopted the formation of distinct peritoneal flaps and the ligation of the stump inside the flaps. These were the distinctive features of my operation. With this method he has reported a series of 51 cases with 2 deaths—a mortality of only 4 per cent. This may be regarded as the standard of results in the operation for hysterectomy for fibroids, and brings it into sharp rivalry with simple ovariectomy. Not all of the abdominal operators have adopted this method of supravaginal hysterectomy. Some of them continue to employ the method of panhysterectomy.

Abdominal hysterectomy was developed by Freund in the treat-

ment of cancer of the uterus. The adaptation of this method to the treatment of fibroid tumors was first suggested by Bardenhauer, but before he had an opportunity to put it into execution, Martin of Berlin, either acting upon this suggestion or upon his

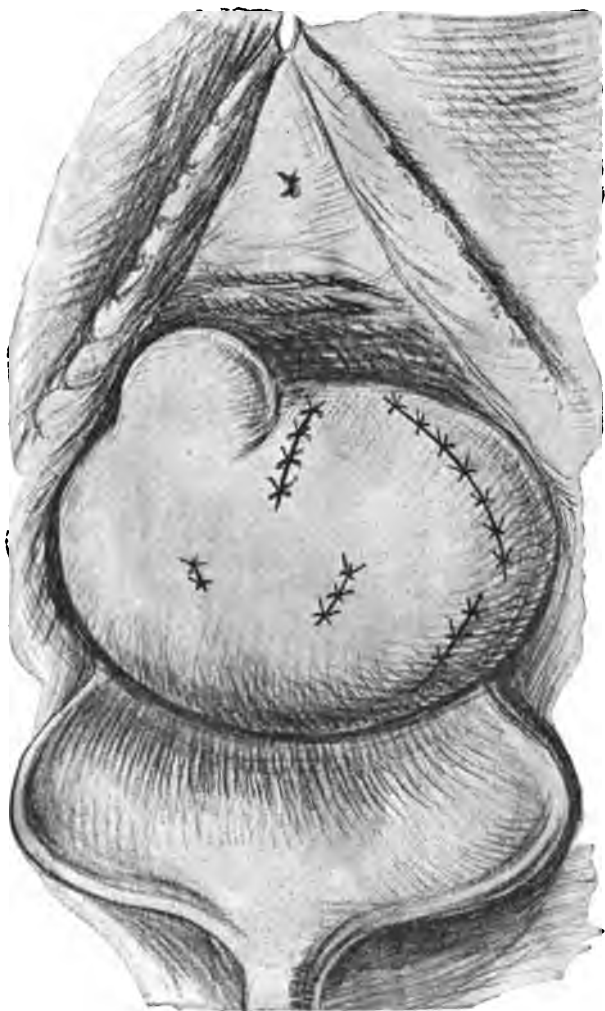


Fig. 4. Vaginal Myomectomy.

own initiative, applied the method in two cases, both of which were successful. This was in 1889. The operation was accomplished in two distinct steps; first supravaginal amputation, second removal of the cervix. Martin leaves the wound in the

vagina open, packs the pelvis with gauze and secures drainage per vaginam. Chrobak of Vienna, adopted this method for a time, but modified it by making distinct peritoneal flaps from the anterior and posterior faces of the uterus, with which he covered over all raw surfaces, and the ligatured stumps. Chrobak later became a convert to the method of retaining the cervix. In this country the technic of total extirpation as practiced by most operators, differs from the German method. Instead of making two distinct steps in the operation, the dissection is carried down into the vagina and the tumor, uterus and cervix are removed *en masse*. The traumatic tissue is disposed of as after vaginal hysterectomy. These men are not all devoted to this method exclusively, sometimes the supravaginal method is employed. Formerly silk was used almost exclusively for ligatures. At the present time this has been pretty generally discarded for an absorbable material and chromic gut and kangaroo tendon are indiscriminately employed. The angiotribe still holds its place as a reliable hemostat and is especially serviceable in controlling the uterine artery in continuity in cases in which the cervix is retained. I use it constantly, although not exclusively.

It has gradually become the custom in hysterectomy for fibroid tumors to leave one or both ovaries. The tubes when healthy may be retained also. By the retention of the ovary the patient is supposed to derive benefit from the continued secretion of that organ. As a matter of fact, there is less disturbance of nerve balance, a more satisfactory recovery, and a larger measure of good health and enjoyment secured in those cases in which the ovary is preserved. In opposition to total extirpation I have this to observe, that the technical difficulties involved in the removal of the cervix, and the control of hemorrhage from the vagina where it has been incised, surpass those encountered in all the rest of the operation. Moreover, by leaving the cervix as a stump and covering over the raw tissue by peritoneal flaps, the pelvic organs are adjusted to as nearly a normal position as possible, and the traumatic tissue necessitated by the operation is disposed of as perfectly as in a plastic operation. The percentages of recovery are about the same in the two methods. There are certain conditions, however, in which removal of the cervix is indicated, and then complete extirpation of the entire organ by either the German or American method is in order. These conditions are suppurating complications in which pus has escaped during operation, the exposure of large raw surfaces due to the

stripping off of extensive adhesions from the walls of the pelvis or intestines and the presence of cancer in either the body of the uterus or the cervix. The removal of the cervix as a prophylactic against the later development of cancer is based upon a very remote contingency. The cervix atrophies after supravaginal amputation. It does not degenerate into cancer.

It is recognized at the present time that either complete or supravaginal hysterectomy is contraindicated in women of child-bearing age, except in tumors of large size involving the entire substance of the organ, or when complicated by destructive disease of the appendages. Conservation of tissue and of function is the dominant note in the surgery of to-day, and in all cases in which the conditions give promise of future function and justify the attempt at conservation, without the involvement of too great risk, myomectomy as contrasted with hysterectomy is the method of choice. The life history of tumors of the uterus, their degenerations, their malign influence in aggravating, if not producing, complicating disease of the appendages, their interference with impregnation, gestation and parturition, and their probable influence in producing carcinoma of the uterus—their life history, I say, as elucidated by careful and continued study, is gradually overthrowing the old classic teaching, and establishing the rule for the advanced operators in this field, that every neoplasm of the uterus that produces symptoms or that may be discovered incidentally in the process of any pelvic operation, should be removed. Indeed, personally, I go farther than this, and for my own individual guidance have formulated the rule that every neoplasm of the uterus when discovered in a woman during the child-bearing period, wherever situated and whatever its size, large or small, should be removed forthwith. Prophylaxis applies here as in every other field of medicine. Its corollary is equally applicable. The earlier the remedy is applied the simpler its application and the more effectual its results.

This is the position I took in discussing a paper on "The Complication and Degenerations of Fibroid Tumors of the Uterus," read by Dr. Noble of Philadelphia, before the Obstetric Section of the Academy of Medicine, in April, 1901. In a more recent paper read before the Amer. Gynec. Society at Boston, May, 1904, Dr. Noble analyzes, on the basis of complications and degenerations, 1,188 cases of fibroid tumor of the uterus by seven different operators, and comes to the conclusion that, based upon careful clinical and pathological findings at least 795 of these patients

must have been sick women; that at least one-third of them would have died from the degenerations and complications had they not been subjected to operation; that women having fibroid tumors therefore run a far greater risk of losing their lives by not being operated upon than by submitting themselves to operation, and that as a general rule, when tumors are present in the body, symptoms or no symptoms, they should be removed.

Accepting, then, the general principle that these tumors of the uterus should be removed when discovered, the technic of the operation must be varied to meet the various conditions. When the tumors are small, they may be removed per vaginam. This is accomplished either through the posterior fornix, the anterior fornix, or, when necessary, both incisions may be made. Through these incisions one or more fibroids can be shelled out, a buried suture placed in the musculature to control hemorrhage and restore the uterine wall, and the wound covered with peritoneum by the Lembert suture. In this way I have removed from one patient as many as seven tumors, situated in various parts of the uterus, and varying in size from that of a marble to that of a hen's egg. Tumors three inches in diameter can be successfully attacked and removed in this way. The advantages to the patient, of operation by this route, are all those that pertain to the vaginal method in preference to the abdominal. The primary danger is less, the convalescence is more comfortable, the fear of subsequent hernia is obviated and the woman is free from any reminder of mutilation, secured by the absence of a scar. This method is especially adapted to young unmarried women.

Tumors of larger size than $3\frac{1}{2}$ or 4 inches in diameter, are better attacked through the abdominal incision. The technic in dealing with the tumor and its immediate field is quite the same as in vaginal myomectomy, but the field of application is far wider. It is astonishing how many and what large tumors can be removed, leaving a functioning uterus. The uterus can be hemisected with impunity quite down to the cervix, the tumors shelled out on either side and the organ restored by stitching together the two halves of the uterus. Even after extensive work of this character women have become pregnant, gone to term and been delivered successfully of living children.

There is an element of danger, however, in myomectomy, especially in these extreme cases, that does not obtain in hysterectomy. It lies in the possibility of an oozing that may occur in the re-

action from the operation which may amount to a hemorrhage of considerable proportion and in the increased danger from sepsis due to enclosed wounds in an internal organ beyond the reach of prompt relief by drainage. These dangers may be obviated by taking the precaution to insert gauze drain, in both the uterus and Douglas' pouch, carrying it through into the vagina. The gauze in Douglas' pouch should be sufficiently abundant to reach to the fundus of the uterus, thereby lifting the omentum and intestines out of the pelvis and away from contact with the uterine incisions. This gauze should be in one continuous strip, and beginning on the fourth day after operation should be drawn out gradually day by day. Where the tumor or tumors are within the uterine cavity—fibroid polypi—the clean, safe, surgical method is to open the uterus, *i.e.* do a Cesarean section, and remove them *en masse*. When the growth is small, the section of the uterus may be made by the vaginal route, and when of larger growth by the abdominal method. This enables the operator to remove the growths without undue injury to the uterus, to treat securely the seat of their attachment and thus avoid the dangers of hemorrhage and sepsis. I show you here two small fibroid polyps removed from the fundus by vaginal Cesarean section, the incision extending up the anterior wall clear to the fundus. One of these is the size of a hen's egg and the other that of a marble. I also present this large, solid fibroid removed from the interior of the uterus by abdominal Cesarean section, thus preserving to the woman, who was only 29 years of age, a functioning uterus. The patient had borne one child—4 years before; sterile since.

CRITICAL POINTS IN THE TECHNIC.

The elements of danger in myomectomy, or in hysterectomy for fibroid tumors are:

1. The wounding of the bladder in making the abdominal incision. In cases in which the tumor has developed in the anterior wall, the bladder is usually carried high on the anterior face of the tumor, and may be brought directly in contact with the abdominal wall. The bladder, then, will lie directly under the line of incision. It is well, therefore, in cases of large tumor to enter the peritoneal cavity, near the umbilicus, and enlarge the incision from above, downward, after careful investigation as to the position of the bladder.

2. Wounding the bladder in dissecting it from the tumor or

uterus. It is not necessary to pass the sound into the bladder, after the abdomen has been opened. The process introduces an unnecessary source of danger from sepsis. Sight and touch are sufficient to locate the boundaries of the bladder. The tissues may be pinched up and rolled between the thumb and finger, the presence of the bladder wall being indicated by the ease with which this is accomplished. After the incision is made through the peritoneum, the bladder flap is easily dissected down, with a gauze sponge or the blunt end of the scissors.

3. Wounding of ureter in ligating the uterine artery—ureter in normal position.

The distance of the ureter from the cervix, where it passes under the uterine artery, varies from $\frac{3}{4}$ of an inch to $1\frac{1}{4}$ inch, its course is slightly oblique toward the medium line from behind forward. The ligature carrier should, therefore, always be entered on the posterior aspect of the tissues, and carried forward parallel with the ureter, hugging the cervix. When the cervix is left, the ligature carrier can be passed around the artery, quite in contact with the cervical tissue, but when total hysterectomy is contemplated, the ligature must be carried far enough away from the cervix (and, therefore, nearer to the ureter), to prevent its slipping off after the cervix has been cut away. In this step of the operation the retention of the cervix is an element of safety against ligating the ureter. Some operators locate the ureters by catheterizing them, and leaving the catheters in place during the operation. Except in the hands of a specialist skilled in this work, this is a formidable process, consumes time and is quite unnecessary if proper precautions are taken.

4. Wounding the ureter when in abnormal position. Before beginning the application of ligatures, every tumor should be carefully examined to locate its relative position in the walls of the uterus. Tumors that have their seat of origin low down posteriorly are apt to be subperitoneal, and as they increase in size lift the uterosacral ligaments and one or both ureters out of normal position, so that in some cases the ureters may be traced over the summit of the tumor or pushed to either side, where they are in danger of being caught in placing the ligature upon the broad ligament. Tumors that develop in the broad ligament are also prone to displace the ureters. These complications are best met by bisecting the mass where it is clearly exposed, but as nearly in the medium line as possible, and then shelling out the tumors from either side. When this has been accomplished, the

pliant, elastic tissues will readily assume their normal relations, and ureters and other structures are promptly recognized.

5. Securing sufficiently large peritoneal flaps to cover the uterine wound in myomectomy. The tension to which the peritoneum and the muscular structure of the uterus are put in the development of the tumor, is usually extreme, and as soon as this is relieved, they retract so firmly, that in closing the gap, after the tumor has been removed, too great tension may be placed upon the sutures, and they may tear out. This retraction of the tissues, when tension is relieved by the incision through the peritoneum, is noticeable even in quite small tumors. It has become my rule in myomectomy, therefore, to make the incision precedent to the removal of the tumor directly over its summit, and later to trim down the covering, according to the required size of the flaps.

6. The wounding of intestine in separating the adhesions.

The treatment of intestinal adhesions in fibroid tumors conforms to the general rule for the management of such conditions under all circumstances. The guiding principle to be kept in mind is that the intestines are being separated from the pathological mass, and any sacrifice of tissue must be at the expense of the latter, rather than the intestine.

With this recent view of the pathological condition, known as fibroid tumor of the uterus, we are able to formulate a systematic treatment which, with reasonable exceptions as presented in individual cases, offers prompt and satisfactory relief. Having the indications, the route of attack, and the technic all completely worked out, there is no reason why this perfected procedure should not take its place in surgery as an established rule of practice and on as firm a basis as ovariectomy.

29 WEST FORTY-SIXTH STREET.

THE CARE AND FEEDING OF PREMATURE INFANTS.

BY

JOHN LOVETT MORSE, A.M., M.D.

Instructor in Pediatrics, Harvard Medical School; Assistant Physician at the Children's Hospital and the Infants' Hospital, and Visiting Physician to the Floating Hospital, Boston.
(With Six Illustrations.)

Viability.—There are very few authentic cases of the survival of infants born before the twenty-seventh or twenty-eighth week of pregnancy, although Home's case, which was supposed to have

been born in the eighteenth week, was alive and well at nine years. Very few survive any length of time if the weight is under two pounds or the length less than thirteen inches. Oberwarth recently reported a case, and collected seven others from literature, however, in which the weight was less than two pounds, which lived months or years. Home's case, just referred to, measured but eight inches. It is not of much practical importance, except for medicolegal reasons, however, to know the exact age of the premature infant. No matter how young it is, how little its weight and length, or how poor its prospects of survival, it should always be treated as if its chances for life were of the best.

Development.—The premature baby is not merely a small baby; it is an undeveloped baby. It is not ready to be born or to live under extrauterine conditions. The younger it is, the less developed it is and the less prepared to struggle against the abnormal conditions in which it is placed. It is intended to float in warm water of a constant temperature; it has, instead, to be handled and exposed to air of all degrees of temperature. Its circulation is compelled to change from the fetal to the adult form months before it is ready for the change. It is compelled to breathe air into lungs only partially ready for use with an undeveloped thorax and respiratory muscles. It is obliged to use digestive organs only partially completed, instead of obtaining nourishment already prepared through the circulation. In short, it is not prepared for an independent existence, and has to depend for its life on organs only partially ready to perform their functions. The more these facts are appreciated the more care and attention will be given to these infants.

In a general way, all the peculiarities and weaknesses of the infant at term are exaggerated in the premature infant. Certain points in their development are, however, worthy of more detailed consideration. The lungs at full term are poorly enough fitted for use; they are even less so before term. They contain comparatively little alveolar structure and on account of the loose attachment of the blood vessels are very prone to congestion and inflammation. The pulse and respiration are irregular in rhythm, partly from lack of nervous control and partly because of the underdeveloped condition of the organs and muscles concerned.

The capacity of the stomach is limited, ranging from 5 c.c. to 20 c.c., according to the age and size of the individual infant. All the functions of digestion are feeble, that for sugar being more developed than those for fat and proteids. The amylolytic

function is practically non-existent. Premature infants should not, therefore, be given starch in any form.

The function of the sweat glands is not developed at full term, and hence is not, of course, in premature infants. The premature infant is thus deprived of one of the most important ways of losing heat. High external temperatures are, therefore, extremely dangerous for them, and may comparatively easily cause a heat stroke. The following chart shows very well the effect of ex-

cessive heat on a premature infant whose nurse allowed the temperature of the incubator to go too high.

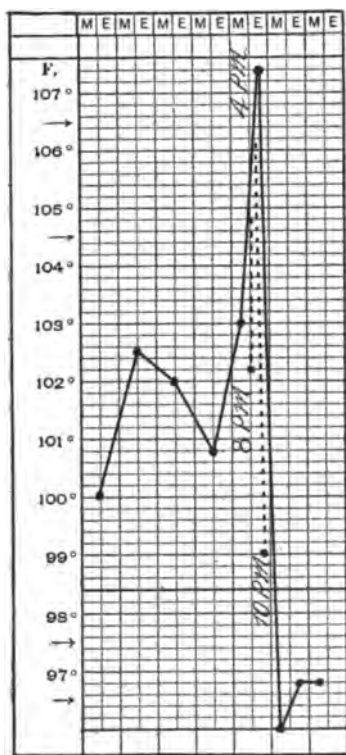


Fig. 1. Chart.

Animal Heat.—On account of their small size, the surface area of premature infants is proportionately larger than that of full term babies. Their heat regulatory centers are, moreover, poorly developed. Consequently they lose heat very rapidly. They cannot, therefore, bear low temperatures or exposure. They must be protected in every way against cold and exposure. The importance of this protection can hardly be exaggerated. It is perfectly possible for a single slight chill to turn the scale from life to death and undo the labors of weeks or months. On account of their greater loss of heat, premature babies need relatively more food; that is, more calories per kilo than full term infants. Ex-

periments show that they require from one-fifth to one-quarter more calories per kilo than do normal infants. In spite of their greater need for food, they are, however, less able to take and digest it. This illustrates very forcibly the disadvantages under which they labor.

Resistance to Infection.—The resistance to infection of premature babies is, for many reasons, very slight. Their respiration

is feeble, their digestion imperfect, their tissues undeveloped, and their vitality low.

Care of Premature Infants.—There are two objects to be attained in the care of premature infants. The first of these is to keep the baby alive; the second to develop its organism to the stage normally reached at full term. The second of these is often forgotten, but is almost as important as the first.

The two most important points in the care of premature infants are the maintenance of the animal heat and the provision of a suitable food. It is unquestionably of advantage to protect them from noises, bright lights and handling, because in this way the normal intrauterine conditions are more nearly approached, but the importance of all these measures is infinitely less than the maintenance of the animal heat and the provision of a suitable food. Premature babies must be left alone and not handled. Handling cannot possibly do them any good and is almost certain to do them harm. They should not be picked up or disturbed in any way. Premature babies should not be regarded as curios and shown to everyone who happens to come along. Every person that sees them disturbs them to some extent and increases the chances of exposure and the dangers of infection. No one but the immediate family should be allowed to see them, and they should be allowed but one look.

Maintenance of Animal Heat.—While attempting to keep up the infant's animal heat, it must not be forgotten that both fresh air and pure air are necessary for its well being. It cannot thrive on air which has lost its oxygen and it will be infected by bacteria-laden air even if it is kept warm. There are two means by the use of which the animal heat may be kept up. These are incubators and substitutes for incubators.

Incubators.—The ideal incubator is one which will maintain any temperature desired constantly, and at the same time provide a sufficient supply of pure, fresh, warm air. I have never seen one which will do this. Most of them will maintain a constant temperature, or can be made to do so. None of them provides a sufficient supply of pure, fresh, warm air. None of them can do so unless some better system of ventilation is provided than has been up to the present time. Such a system would, moreover, probably be applicable only in hospitals. One result of the lack of fresh air is a diminution in the baby's vitality and in its resistance to infection. Bacteria grow most luxuriantly at the temperature at which the incubator is kept, so that another result of the lack of

fresh air is an increased liability to infection. My experience leads me to believe, moreover, that premature infants do better if they have air to breathe of a slightly lower temperature than that at which the air of the incubator is kept. Personally, therefore, I prefer, at any rate in private practice, some substitute for an incubator to the incubator itself.

The best and most available substitutes for the incubator are the padded crib or basket. If a crib is used, it must be a small one. An oval clothes-basket is very satisfactory. The bottom and sides



Fig. 2. Padded Crib.

of the crib, or basket, must be padded thickly with cotton. The top should be covered with a blanket which reaches to a little below the baby's neck. The temperature of the baby's immediate surroundings can be kept at any temperature desired by the judicious use of hot water bottles or bags. This temperature should be between 95° F. and 90° F. The temperature should be taken from a thermometer which is wrapped in the baby's clothing and not from one hung in the crib. The dangers of over-heating and of chilling have already been mentioned. Both can be to a certain extent guarded against by the regular observation of the infant's

rectal temperature. The temperature of the room should be kept between 85° F. and 80° F., thus giving the baby air to breathe of a somewhat lower temperature than that of its immediate surroundings. The infant should be kept in a room by itself. The room should be sunny and have an open fireplace with a fire in it. The crib should be protected from draughts by screens. If it is possible to do so without getting the temperature too low, the window should be open.

Other important methods of keeping up the animal heat are those which prevent the loss of heat. Most of these methods have



Fig. 3. Padded Crib, with Cover.

an additional advantage in that they prevent handling. The baby should not be bathed, not even at birth. It should be oiled with olive oil then and every two or three days afterward. This gradually cleans it and keeps the skin in good condition. It should be oiled in its crib, not in the nurse's lap. It should not be dressed, but should be wrapped in absorbent cotton, or better, in a quilted gown with a hood. The gown is made by quilting cotton between two layers of cheese-cloth. This protects the baby as well as cotton alone, and makes the care much easier. A diaper may be used

in fairly strong babies; absorbent cotton makes a satisfactory substitute in the feeble.

Feeding.—The best food for premature babies is human breast-milk. All the reasons which make breast-milk the best food for



Fig. 4. Gown.

full-term babies are doubly applicable in the case of premature infants. If much premature, they cannot be put to the breast be-



Fig. 5. Infant in Gown.

cause of the consequent exposure and handling. Very feeble babies are, moreover, unable to suck. In some cases the nurse can lean over the crib and thus put the nipple in the baby's mouth.

In many cases, however, the milk must for a time be taken with a breast-pump and fed in some other way. Many premature infants, in fact most in the beginning, are unable to digest full-strength breast-milk. It is safer, therefore, at any rate at first, to dilute the breast-milk with water, in the proportion of two or three parts of water to one of milk. A small amount of milk sugar may or may not be added. Premature infants usually do better on milk two weeks or more old than on the colostrum. In the beginning, therefore, the milk of a wet-nurse is better than that of the mother.

The most suitable food, if breast-milk cannot be obtained, is some modification of cow's milk. Whey mixtures are better than ordinary mixtures, because the proteids are in a more easily digestible form, and hence throw less work on the feeble digestive organs. Very weak mixtures should be used at first. If the baby is not satisfied, it is very easy to increase the strength of the mixture. If too strong a mixture is given in the beginning, it may kill the baby, and will certainly cause disturbances of digestion which will require days or weeks to correct. It is never a mistake to give too weak a mixture in the beginning, even if for a time it has to be strengthened every day or two.

The following mixtures are suitable ones. It is never a mistake to begin with the weakest one. Strong babies and those near full-term may, however, take the stronger ones at once without harm.

Fat	1.00
Sugar	3.00
Total Proteids	0.25
Fat	1.50
Sugar	4.00
Total Proteids.....	0.25
Fat	2.00
Sugar	5.00
Total Proteids.....	0.50

It is better to split the proteids in all these formulæ by using whey mixtures, making the lactalbumen and caseinogen the same. These formulæ, unfortunately, cannot be made with gravity cream, as a cream containing at least 32 per cent. of fat is needed. They must, therefore, be prepared at a laboratory or with a high-percentage cream. Five per cent. of lime water should be added and the mixture pasteurized at 155° F.

It is better to begin by giving 5 c.c. at a feeding. If the baby is not satisfied, it is very easy to gradually increase the amount. No

harm can be done by giving too little at first; irreparable harm may be done by giving too much.

It is rarely advisable to feed a premature infant as often as once an hour, as this gives it almost no time for rest or sleep. The best interval in the beginning is usually $1\frac{1}{2}$ hours. The food should be given at this interval both day and night, making sixteen feedings in 24 hours. This interval should be lengthened to two hours as soon as possible. Feeding should be commenced as soon as the food can be prepared, that is, within a few hours after birth.



Fig. 6. The "Breck" Feeder.

When the infant is strong enough to take food from a nipple, it should be fed from the bottle. Many babies are not strong enough to do this, however, and have to be fed in some other way. The most satisfactory way of feeding such babies is with the "Breck Feeder," designed by Dr. Samuel Breck, one of the physicians to the Boston Floating Hospital. It consists essentially of a graduated glass tube open at both ends. On the smaller end is a nipple about the size of the rubber of a medicine dropper. This is perforated and goes into the baby's mouth. On the other end is a large rubber finger-cot. By squeezing the finger-cot milk is forced into the baby's mouth and efforts at sucking aided or induced. Some babies are too feeble to take food even in this way and have to be fed with a dropper. It is almost never advisable to use a stomach tube, as the shock of passing it usually does more harm than the food does good.

Stimulation in the form of brandy in doses of 1 or 2 drops, or of strychnia in doses of 1-1,000 of a grain, is often necessary for a long time. Oxygen is very useful when there is cyanosis, and will sometimes carry babies through very critical periods. It is always well to have oxygen close at hand. Babies who have a plentiful supply of fresh air rarely need it, however.

Nursing.—It is evident from what has been said that it will require the whole time of two able-bodied women to care for and feed one premature infant. No one person can do it properly, as the constant attention and frequent feedings never allow more than an hour of consecutive sleep, and usually much less. Every-

thing depends on the care and watchfulness of the attendants. Their position is a far more important one than that of the physician. Trained nurses are much preferable to unskilled attendants, especially if they have been trained in the care and feeding of infants.

I realize, of course, that I am describing ideal conditions which can only be attained when people are well-to-do and do not have to spare expense. There is no reason, however, why they should not be kept as an ideal in other cases in which the circumstances are less favorable, and approached as nearly as possible. When everything can be done, regardless of expense, I think premature babies do much better in their own homes than in a hospital. They receive more individual attention and are much less exposed to infection. For the same reasons I prefer even only moderately good surroundings at home to those of a hospital.

Prognosis.—The prognosis depends chiefly on the age and weight of the infant and the care which it receives. The older the infant, the better the prognosis. Every day counts. There is, of course, nothing in the old saying that seven months' babies are more likely to survive than eight months' babies. It probably originated in the fact that seven months' babies were given special care, while eight months' babies were treated in the same way as those born at full term. The prognosis is almost absolutely bad when the weight is under two pounds. It is very fair when it is over four pounds. Every ounce of weight over two pounds increases the chances of survival. The importance of care and of attention to the minutest details of the treatment has already been mentioned. Too much stress cannot be laid upon it.

Premature infants that are doing well usually run a slightly elevated temperature; those that are doing badly almost always run a subnormal temperature. A drop in the temperature should always be regarded as a sign of danger, even if all other conditions seem favorable. Premature infants that are apparently doing well in other ways often go many weeks without any gain in weight. This is not a cause for discouragement, because during this time they are almost always gaining steadily in development and approaching the status of the normal full-term infant. We should be satisfied, for the time, if we are developing a normal baby; it is easy enough to make it gain later.

Premature babies are very apt to die suddenly without any apparent cause. It is never safe to consider them out of danger until they are thriving under normal conditions. Up to this time the

prognosis should always be guarded. If they survive, they become as vigorous and as large adults as do full-term babies.

70 BAY STATE ROAD.

Read before the Washington Gynecological and Obstetrical Society,
January 20, 1905.

SARCOMA OF THE UTERUS, WITH REMARKS ON RADIOTHERAPY.*

BY

H. GRAD, M.D.,

New York.

IN the female generative organs sarcoma is found less frequently than carcinoma, and the sarcomata encountered here are mostly those found in fibroid tumors of the uterus that have undergone sarcomatoses. The two cases reported in this paper may prove of some interest in so far as sarcoma of the uterus is rare, and in one of these cases operative treatment was supplemented with radiotherapy.

Sarcoma of the uterus is described as occurring in three different forms. (1) As sarcoma of the cervical portion, occurring in young women as a mulberry growth. (2) Sarcoma of the mucous membrane of the organ, and (3) as sarcoma of the parenchyma of the uterus. All three forms of sarcomata are comparatively rare in this situation, only about 150 cases having been recorded in literature when Williams collected them ten years ago. A fourth type of an extremely malignant neoplasm, microscopically resembling sarcoma, is encountered, and known by the name of deceduo-malignum, always associated with pregnancy. Pulmonary metastasis is an early characteristic feature of this latter type of neoplasm, although all sarcomata manifest the tendency to metastasis. Attempts have been made, notably by Williams and Pick, to prove that sarcoma may have its starting point from muscle cells. Some very interesting observations were made to justify the claim. To admit such an origin for sarcoma would mean to oppose the firmly rooted dictum that "cell begets like cell." A muscle cell could hardly beget a cell so dissimilar to it as the cells of a sarcoma. The origin of the cells of a sarcoma in the parenchyma of the uterus is supposed to be from the connective tissue cells. Indeed, the microscopic appearance of these

* Read before the Woman's Hospital Society, January 24, 1905.

malignant cells conforms to the type of connective tissue. In the fibroid tumors that have undergone sarcomatous changes the origin of the malignant cells may also be that of the connective tissue. If this be so why do these cells remain dormant for long periods of time in fibroids, and suddenly develop a propensity to divide and subdivide? What stimulates these tissue elements to that abnormal activity of growth, division and subdivision? If we still cling to Cohnheim's hypothesis of the embryonal origin of tumors, seeing that recent researches disclaim parasitic and bacterial origin of malignant neoplasms, we must assume that embryonal tissue existed in the fibroids. If so, we must also assume that embryonal cells were first imbedded in the tissues of the uterus; that abnormal activity of these cells at first gave rise to a fibroid, and that finally their continued activity culminated in a malignant degeneration.

In sarcoma of the mucous membrane of the uterus, small polypoid growths may form, not unlike the ordinary polypoid hypertrophies of the mucous membrane. The differential diagnosis between the benign and the malignant is only possible with the microscope. Cases are on record where the removal of apparently benign polyps has been followed by an extensive return of a malignant process. Such was the history of the case to be reported below. Sarcoma beginning in the mucous membrane of the uterus develops with great rapidity. Ulceration soon takes place, and the entire uterus becomes one mass of malignant neoplasm. While invasion and infiltration of the uterus is the rule in sarcoma of the mucous membrane of the organ, a case is on record by Reed where pedunculation of the tumor occurred with only slight uterine wall involvement.

The sarcomata having their origin in the cervix usually take on a mulberry appearance. They look much like a hydatid mole. They have been described as sarcoma botryoides. They occur usually soon after puberty, but cases are on record where they occurred after the climacteric. Pfannenstiel termed them "das troubig sarcom" or grape-like sarcoma. The cyst-like masses resemble hydatids and consist of round or spindle cells, separated by clear spaces. Pick, who has studied them carefully, says that the "Sarcoma botryoides, as observed in the cervix of adult women and children, and the vagina of children, is in every respect a special variety of tumor, characterized by its grape-like form. Clinically, it is extremely malignant. Anatomically, it develops from the most superficial layer of the mucous membrane, it spreads first in

the superficial portions of the mucosa, it shows a strange tendency to invade the deeper tissues, and it assumes its grape-like form owing to the freedom with which it may expand and become edematous in the wide cavity of the vagina."

The so-called fibro-sarcomata, springing from the uterus, usually grow slowly, attaining, frequently, considerable dimensions before they give rise to symptoms sufficiently serious to call for their removal. These tumors are soft, globular, springing from the parenchyma of the uterus, and like fibroids, may be subserous, interstitial, or submucous. The neoplasm consists of fibrous or muscular tissue, with abundant cell proliferation wedged in between those structures. If the tumor starts as a submucous growth, it gives rise to the broad-based polypoid tumors. The question is pertinent, whether these tumors are sarcomatous from the inception of their growth, or whether they are secondary metamorphosed fibromyomata. No case of sarcoma of the uterus has yet been reported where the neoplasm possessed a distinct capsule, as is the case with fibromata or fibromyomata. So it is not unlikely that the neoplasms called fibrosarcomata are really soft fibromata or fibromyomata that have undergone sarcomatous degeneration. That such degenerations do occur in benign neoplasms has been abundantly demonstrated by careful investigators. A paper bearing on this subject was read by Dr. Backer and Dr. Graves before this society a year ago (*AM. JOUR. OF OBST.*, Vol. XLVIII, No. 3). Dr. Graves, who made the microscopic examinations, says: "During the last nine months I have made careful examinations of thirty-three cases of uterine myomata, three of which showed sarcomatous degeneration. It would be absurd for me to infer from this that 9 or 10 per cent. of all myomata become malignant, because the number of cases are too few. They are, however, important in one respect: Of the four cystic or edematous myomata, three were also sarcomatous, thus confirming the intimate relationship between the two forms of degeneration. In one case a very large and rapidly growing myoma showed microscopically a myomatous cortex with a soft edematous necrotic core. Microscopically the peripheral portion was pure myoma, which merged gradually into typical sarcoma towards the center." Beyea reports a case (*AM. JOUR. OF OBST.*, Vol. XLVII, No. 2) of sarcoma of the uterus, developing, as he believed, from the myometrium. His patient was 57 years old, and the tumor was noticed for about a year. She was hysterectomized but died on the third day after operation. The pathological report was that the tumor was as

large as an adult head, "the nodules were interstitial in position and developed in the myometrium. The endometrium was smooth and intact through its entire surface. The myometrium itself was normal in appearance and varied in thickness from one to two centimeters. The right uterine wall contained a nodule fifteen by ten centimeters in diameter, bulging into the uterine cavity. On section the nodules were found to be indefinitely encapsulated and wholly surrounded by myometrium. The microscope showed the nodules to consist of spindle and round cell sarcoma." The author further says: "We have been unable to demonstrate whether it is an instance of the metaplasia of the muscle cells of a myoma, or the myometrium into a myosarcoma, or whether the tumor had its origin in the connective tissue of a myoma. There is no positive evidence that there was a pre-existing myoma of the uterus, yet we have no information that would disprove this fact." There would indeed be considerable difficulty in demonstrating beyond doubt in sarcoma of the uterus of the parenchyma, that the malignant process is not one engrafted secondarily on a benign tumor. This same argument holds good in the second case reported in this paper.

The history of my first case is as follows: *Case I.*—Mrs. B., age 43, was first seen in August, 1902. She gave then the history that her illness dated back six months, when she noticed a continued bloody vaginal discharge and pelvic pain. On consultation her physician advised the removal of a small tumor from the womb, which he believed was the cause of her metrorrhagia. The removal of this polypoid tumor was accomplished without anesthesia. The patient does not know if the removed tissue was examined microscopically. She remained in bed for a week, during which time her pain diminished, but the vaginal discharge did not abate. For the next six months, at various times, the patient was obliged to remain in bed, suffering with what she described as inflammation of the womb. Her general health began to suffer, she lost flesh, and sleeplessness became troublesome. The vaginal discharge increased markedly, being watery in nature, mixed with blood. Her menses became prolonged, and in fact she was never quite clean. She complained of backache and pains in the groin, and weakness, unable to do even light housework. Examination bimanually revealed an immovable uterus, boardlike vagina, cervix destroyed by disease, with a strong tendency on the part of the vagina to close in the defect in the cervix. Fundus of the uterus cannot be outlined, it seemed to be buried by adhesions and prob-

ably intestines. The pelvis is filled with a hard, unyielding, immovable mass. Examination through vaginal speculum shows a large, raw, angry, bleeding surface, considerably excavated with necrotic masses, here and there the vagina cicatrizing and vainly trying to heal over the raw surface. Examination is followed by considerable bleeding, necessitating tamponage of vagina. The lower part of abdomen is tender to the touch and the examination causes backache. Heart and lungs normal. Anemia and mild cachexia noticeable. Some emaciation and weakness complained of. A diagnosis of inoperable carcinoma uteri was made. The case was one of those that used to be given over to the galvano-cautery treatment so successfully carried out by the late Dr. Byrns of Brooklyn. It was a case that was absolutely hopeless, inoperable, unamenable to therapeutics, and one in whom no one takes interest and for whom no one cares.

Radiotherapy having at this time risen in bold relief above the medical horizon, and having had some experience with this marvel, I eagerly embraced the opportunity of employing it in this case that so aroused my sympathy. For six weeks the patient was subjected to the influence of the Röntgen rays, the following technique being used: She was placed in the lithotomy position and a vaginal speculum inserted. Through this speculum the accessible parts were rayed with an x -ray tube of medium hardness, energized by a 12-plate static machine for 10 minutes. The patient was then placed on her back, in a horizontal position, and the lower part of the abdomen exposed to the rays for 10 minutes more. The anode of the tube was made to point in the direction of the pelvis. These exposures were given every other day for three weeks, after this every third and fourth days. In order to guard as much as possible against a dermatitis, and to spare the skin of the abdominal region, the pelvic contents was rayed by directing the anode toward the outlet of the pelvis. This was done by placing the tube below the perineum with the patient in the Sims position. At first two of these positions were used at each seance, alternately, but later only one position was utilized for each treatment. One time the abdomen would be rayed and the next time the perineum, while at the third sitting the exposure would be through the speculum. After the third exposure, a most remarkable improvement in the condition of the patient was noticeable. The bleeding stopped, the vaginal discharge disappeared and there was a cessation of the pain. With the improvement of the local condition there came better general health

Sleep returned, appetite increased, discouragement gave way to hopefulness. By the end of the third week of the treatment, the pelvic tenderness had disappeared and bimanual examination showed that a remarkable change had taken place in the pathology of the pelvis. Instead of boardlike vaginal walls, there were now normally yielding structures; in place of the raw, angry cervical excavation, there were healthy granulations to be seen, over which healthy vaginal mucous membrane was spreading. A process of normal cicatrization was in plain evidence. The uterus diminished in size, the organ became easily palpable, the broad ligaments free from infiltration, and the pelvis apparently free from disease. A surprising, as well as an interesting, change had certainly taken place, as a result of the treatment. At the end of the fourth week of radiation the skin began to show intolerance to the rays and symptoms of dermatitis appeared. An early symptom of impending danger of dermatitis is in many cases a feeling of tightness in the skin, which may or may not be accompanied with itching. As soon as this subjective symptom is mentioned by the patient, radiation should be stopped, because it is impossible to foretell in any given case of what degree of dermatitis this symptom may be a forerunner. The radiotherapy was now discontinued until the symptoms of dermatitis should have subsided. Coincident with the appearance of early symptoms of dermatitis, symptoms of toxemia also showed themselves. The patient was conscious of a feeling of malaise, headache, pains about the body, increased pulse rate, rise of temperature, loss of appetite, and a feeling of illness generally. The symptoms of toxemia subsided in about a week, only to repeat themselves again after a few Röntgen ray exposures. It was evident that tissue destruction by the rays and subsequent absorption caused repeated systemic reactions. I determined now to remove the diseased organ, so as to control the absorption and the resulting toxemia, and also because the surprising changes that had taken place in the pelvis made me hope to effect a cure. Accordingly, on October 6, 1902, a total extirpation of the uterus and adnexia was performed. On opening the abdomen the fundus of the uterus was found buried in adhesions and covered with coils of intestine. After liberating the uterus and separating it from the bladder, the finger broke into a mass of necrotic tissue, and entered the cavity of the uterus. The round ligaments and ovarian arteries having been tied off, and the peritoneum severed in Douglas pouch, the uterus and appendages could be lifted out of

the pelvis, as the organ was quite free, the cervico vaginal junction having been destroyed by malignant degeneration. After a thorough inspection and toilet of the pelvis, removing all necrotic tissue tags, gauze drainage was introduced by way of the vagina, and the abdomen closed in layers. The operation was followed by profound shock, although the patient was on the operating table less than an hour. Reaction, however, was prompt, and 24 hours later the condition of the patient was satisfactory. Pulse 120, Resp. 28, Temp. 99. In a few days abundant vaginal discharge occurred, malodorous and irritating. By the sixth day all the gauze was removed and a more thorough cleansing of the vagina and pelvis was permissible. The lower angle of the abdominal wound opened, but very little inflammatory reaction was visible, and very little pus formed. By the 31st of October the abdominal wound was closed and the vaginal vault nearly healed, the discharge was less and with no odor. The patient left the hospital, provision being made for the continuance of the radiotherapy. The exposures were now made only to the vault of the vagina, the raying through the perineum and abdomen being discontinued. The patient's condition improved and by the end of December the vagina was firmly healed, the cicatrix was soft and yielding and no pathological condition could be felt in the pelvis. The patient was apparently cured. Up to this time I was under the impression that I was dealing with a case of carcinoma of the uterus. The report of Dr. F. M. Jeffries, who made the pathological examination, showed it to be sarcoma, as follows:

"Examination of the specimen marked Mrs. B. reveals the following condition: Uterus about size of a nullipara, cervix is missing and stump very ragged. Cavity slightly dilated, and presents numerous projections. Entire organ is soft and spongy. Microscopically, there is an extensive invasion of a mixed celled sarcoma. The superficial structures, both on the stumps and within the uterine cavity, have undergone extensive coagulation necrosis. The sarcoma cells have invaded the deeper portions of the muscular walls, and it is observed that the nuclei have undergone some sort of a retrograde change, in that the chromatin filaments have broken up into minute granules, distributed evenly throughout the substance of the nuclei. From its nature I would assume that it is of a very malignant type."

This report shows that here we have a specimen of sarcoma of the uterus, where the neoplasm started from the mucous membrane. The small tumor that was removed, six months before

the patient came under observation, was probably the starting point of the disease. Had the disease been recognized then, and radical measures instituted at once, perhaps the result of the case might have been different. This patient was kept under observation for six months after the operation, and no return was noticed. She regained her health and resumed her work and duties. Four months later, however, she returned for examination, because of some pain in the rectum. Bimanual examination by the vagina was negative, the scar in the vagina was normal, no induration could be felt. Rectal examination, however, revealed a roughened surface on the anterior wall, about five inches above the anus. Examination with the proctoscope showed a normal mucous membrane, no ulceration or congestion being visible. The pathological condition was only discernable to the touch. A diagnosis of sarcoma of the rectum was made and radiotherapy again instituted. On account of the position of the mass free x -ray exposures were impossible to obtain, and, therefore, a tube of radium was introduced into the rectum, and placed against the induration and left there from 15 to 20 minutes every other day. In addition, x -radiations were given through the vagina and rectum. The x -ray soon had to be discontinued, on account of dermatitis, but the radium was continued. This treatment was given for four months, when the patient disappeared from observation, probably because of discouragement, having been informed that her malady had returned in the rectum. Nothing was heard of her until January 7, 1905, when I was informed that the patient died on December 31, 1904. The following history was obtained from the husband of the patient: When the patient discontinued the treatment, she was in fairly good condition. She attended to household matters, went out visiting, and even went to playhouses, and but for a difficulty with bowel movements, she apparently was well. While in this condition she fell in with Christian Science treatment and up to within a month of her death was a frequent visitor at their church, on one of the fashionable thoroughfares of this city. Four days before her death her "healer" called in a physician, who held a consultation and signed the death certificate "Cancer of the Rectum." I am also told that about two weeks before her death she complained that some of her bowel movement came out by way of the vagina. There was, however, at no time any bleeding from the vagina or rectum. Towards the latter part of her existence, a watery discharge from the vagina appeared, odorless and scarcely colored.

Emaciation was marked and anemia considerable. She suffered scarcely any pain and slept fairly well.

While nothing lasting was accomplished by radiotherapy in this case, it cannot be denied that this method of therapeusis is to be credited for bringing about conditions that turned an inoperable case into one where operation could be performed. Six weeks of radiation changed the whole scene. The pelvis, choked as it was, with pathologic induration, cleared up so that the anatomic relations became normal, the uterus was reduced to normal size, the broad ligaments became pliable and the vagina yielding. A therapeutic measure that could accomplish this feat is certainly deserving of consideration, even though it falls short—yes, far short—of what the Radiotherapists claimed for it in the heat of enthusiasm, some years ago. Experience has demonstrated that, while the x -rays or radium do not bring about a cure in malignant neoplasms of internal structures or organs, they do bring about remarkable tissue changes, in normal as well as in pathologic tissues. An animal cell may be so stimulated by this physical agent as to have its physiological functions augmented, paralyzed, or even destroyed. Just in what manner the physiological stimulation occurs, or in what manner the destructive action of cells is effected by this agent, is not as yet known. If animal tissue is subjected to the x -rays for some time, and subsequently examined microscopically, it will be found that the cells so exposed have undergone molecular changes of a degenerative type, the protoplasm and nuclei suffering alike. While no animal tissue can withstand the destructive action of the Röntgen rays, of prolonged and often repeated exposures, physiological tissue will resist this deleterious influence longer than pathological. On this fact depends the therapeutic value of the Röntgen ray. Tissues of low vitality will suffer first from degeneration during these radiations. If a malignant neoplasm, for example, is rayed, the cells of the neoplasm will feel the destructive effect of the Röntgen rays before the normal cells are influenced. If the radiation, however, is carried beyond a certain point, not alone the pathological cells, but the normal cells, will suffer a like fate, namely: destruction. The art, then, of radiotherapy consists in administering, during the treatment of a part, just enough rays to bring about destructive changes in the pathologic cells, and not to affect the normal cells of the part, beyond a state of possible recuperation. A degree of x -radiation that brings about destructive changes in pathologic tissue, may be not greater than what

would, in a normal cell, amount to stimulation of activity, and thus augment their physiological function. In cases where this physical agent acts in that manner, two important factors are at work in bringing about a cure of the disease. One is the destruction of the diseased part, another the increase of the normal defences of the body by stimulation of cells to greater activity. The cure of a malignant process by the agency of x -ray therapy is brought about by destruction of the cells of the neoplasm, their subsequent degeneration, and their final removal by absorption and elimination. In exceptional cases the removal of broken down neoplastic cells is accomplished by incision, much in the manner an abscess is drained. Absorption, however, must occur to a greater or less degree, and this introduces a factor in radiotherapy that is of importance; because the absorption of deleterious substances results in systemic disturbances that may seriously react on the organism, and may even prove fatal. Toxemia in radiotherapy, as well as x -ray dermatitis, bars the entrance to the harbor of success in the cure of malignant neoplasms by x -radiations. Were it not for these two dangers encountered in x -ray therapy, every neoplasm could be influenced so as to bring about a degeneration of its tissues. It is a repetition of the problem that is encountered in infectious diseases; in destroying the germ, the organism harboring it may also suffer destruction. In infectious diseases, the normal defences of the body are stimulated extraordinarily to increased activity, and the ready response to this stimulus determines success or failure. In radiotherapy the normal defences of the body also receive a quota of stimulation, to augment their function and thus triumph over the disease. When the neoplasm has been so influenced as to undergo degenerative changes, toxic substances must be removed. It is this process of removal that may act mischievously and nullify the best endeavors of radiotherapy. Then, again, one neoplasm may resist a certain degree of x -radiation to which another tumor would succumb. The degree of radiation or the quantity of x -rays that may be thrown over a tumor is not under the absolute control of the operator; this important factor is determined for the radiotherapist by the tolerance of the skin of the patient. The integument of one patient may tolerate a great amount of raying, while in the skin of another pathologic states will be induced by a very small amount of raying. It is thus that x -ray dermatitis becomes a stumbling block to radiotherapy. X -ray dermatitis ties the hands and prevents rayings to be carried to the point of

causing the destruction of the neoplasm. Not only is the integument to be considered in connection with x -ray dermatitis, but the tissues about the tumor that is being x -rayed. In carcinoma of the left breast, for example, the muscles of the chest, the pleura, the pericardium, the heart, lungs, and all other structures must be taken into consideration, because the x -rays pass through the body, and tissue changes are effected in proportion to the amount of raying to which they have been subjected. The intensity of the rays varies inversely as the square of the distance from the tube and tissues further away from the source of the light will receive proportionately less raying, and less intense will be the physiological effect upon the cells. Dermatitis and toxemia are the two factors, then, that limit the amount of raying of a part or organ, and there is no way of preventing these dangers. No applications to the skin will prevent dermatitis, and when the neoplasm breaks down, the absorption of the broken down tissue cannot be prevented, even though a free outlet is provided for it.

Because of the fact that a malignant neoplasm of an organ cannot be subjected to the destructive action of the x -rays at will, and because, also, some neoplasms resist x -radiation quite as effectively as normal tissue, the failure to cure these affections by radiotherapy is inevitable. Nevertheless, with careful raying, the growth of a neoplasm can be checked. In an inoperable carcinoma of the uterus, for example, judicious raying will accomplish many most desirable therapeutic results. First, it will control hemorrhage to a very effective degree. Second, it will cause diminution of malodorous discharge. Third, it will check the growth of the neoplasm. Fourth, it stops pain and relieves suffering.

Furthermore, the raying, in a number of instances, will turn the inoperable case into one of a good operative risk. By removing these uteri and by continuing x -radiations, a new lease of life is given these unfortunate patients, and their days made more bearable. To effect a cure is our wish, but, so far, it is seldom achieved. It is not to be denied that in return carcinomas and sarcomas the secondary process can be kept in check by the x -rays, to a greater or less degree. In the case cited above, the patient lived 2 years and 4 months after coming under observation, with what was then thought a hopeless carcinoma uteri. Had she not fallen into the Christian Science mire, and had she remained in the hands of science, and may I say, not the less Christian in spirit, her life might have been prolonged and her suffering allayed.

I feel quite certain that the growth in the rectum could have been controlled to a very large extent with the x -rays and radium. I have now a case of carcimoma of the rectum under observation, where one year ago the patient was advised the palliative measure of colostomy by two prominent surgeons of this city. When he began with the x -ray treatment his suffering was great, his incapacity complete, and his rectum occluded and filled with the neoplasm in bunches. After a week or more of raying the rectum and anus were laid open, the skin incised, and the incision carried to one side and beyond the coccyx, so as to lay the whole neoplasm bare, and at the same time give free vent to bowel contents. Within two months the neoplasm was so effected by the x -rays and radium that the man returned to work, his suffering ceased, his bowels moved naturally, and he is once more in the capacity of bread-winner. He takes two treatments each week and the neoplasm is kept in check, although a cure can hardly be expected. How long these palliative measures will be effective, only time can tell, but it must be conceded that much has been accomplished by radiation in this particular case. No therapeutic measure known, it seems to me, would have accomplished as much.

A summary of the physiological effect of x -rays and radium on animal tissue is as follows: One, two, or even three rayings, if not prolonged, may produce no appreciable physiological effect, but if raying is prolonged the integument will show the first visible effect, in so far that the hair of the part will fall out. This depillation is such that the skin is left bare, not even the finer hair remaining. This depillation is hardly ever permanent. The hair almost without exception grows again, and in many cases the new hair grows more luxuriantly. On the strength of this radiotherapists now recommend x -ray exposures for alopecia, either alopecia areata or complete baldness. Following this hair phenomena, or sometimes coincident with it, an erythema of the skin appears. This is preceded by a subjective sensation of tightness and itching. If raying has been carried beyond certain limits the effects will increase, finally reaching the second or third degree of x -ray burn. The first degree of dermatitis is marked by redness and congestion, the second by vesicles, the third by necroses of skin, either molecular or in larger or smaller areas. When erythema first appears, after repeated rayings, it will be impossible to foretell what degree of dermatitis will result, but if the raying has been quite moderate and if the erythema has come on some time after the last exposure, the chances are that

the dermatitis will be of the first, or, at most, of the second, degree. But if the exposures have been quite numerous and frequently repeated, and particularly if the skin congestion and redness appears immediately after the last exposure, the chances of the occurrence of a third degree of dermatitis are great. That an idiosyncrasy to x -radiations does exist must be admitted. A certain degree of raying may affect one patient not at all, while the next one will sustain a dermatitis of the first degree from the same amount of raying with the same apparatus. The first and second degrees of skin inflammation heal readily. but the third degree of dermatitis is exceedingly protracted. Months elapse before the damaged skin cicatrizes. The healed integument after x -ray dermatitis is apt to be tanned considerably like the tanning that occurs in sun burns, and if the damage has been great, the skin will have fine capillaries visible over the surface, much like the capillaries seen on noses with acne rosacea. While an idiosyncrasy to x -ray does exist, it is a negligible matter in using the rays for diagnostic purposes. The exposures here are so short that no harm can result. The anodyne effect of x -radiation is a marked and interesting physiological feature. Its power to relieve pain and allay suffering is of conspicuous therapeutic value. Not alone is the anodyne effect noticeable in malignant diseases, but in ordinary neuralgia also. A trifacial neuralgia, for example, will yield to x -radiation surprisingly, and this is also true of the pain in carcinoma uteri.

Various theories have been advanced to account for the tissue changes brought about by the x -rays. These theories have reference to electric induction, to ultra-violet rays, etc., but to-day it is claimed that these tissue changes are produced by the x -rays themselves, possibly through vibratory influences, or perhaps electrochemic changes. The x -rays are supposed to be longitudinal ether vibrations of extremely great velocity and small lengths. The tissues through which they pass take up this vibration and thus pathologic states are induced in the protoplasm of the cells. Little is known of the nature of the Röntgen rays. The phenomena occurs under certain definite physical laws, the essential being to have a current of electricity of high voltage pass into a vacuum. The x -ray tube is a glass tube, the air of which has been exhausted to a degree so that the internal pressure in the tube is equivalent to one-millionth of an atmospheric pressure. Under such an arrangement, if electricity is allowed to flow into the tube, certain phenomena will result, the fluorescence of the glass being the most

visible. This phenomena has been known for many years, Hittorf having called attention to it in 1869, but it remained for Röntgen, in 1895, to demonstrate that some energy is emitted from these vacuum tubes in action, that this energy affects photographic plates as ordinary light does and that the energy passes through objects opaque to the sun or artificial light. Röntgen, believing this energy to be in the form of rays, named them *x-rays*. These *x-rays* are produced by the bombardment of cathode rays against objects they strike. The cathode rays are particles of matter that were left in the tube at the time of its exhaustion. Under the influence of the current, they take on motion of a very high speed, striking the anti-cathode with great energy. If these particles of matter in the tube are in comparatively great quantity, the tube is spoken of as a "low tube," the term having reference to a low vacuum. By a "high tube" the reverse is understood. The electric force necessary to energize these tubes varies with the degree of vacuum, a "high tube" requiring a greater current energy than a low vacuum tube.

With radium, we have to deal with the same kind of phenomena, except that here we have three different kinds of rays, the alpha, beta, and gamma ray. The α rays are minute particles of matter only slightly penetrating, are charged with positive electricity, and supposed to travel with a velocity of 20,000,000 meters a second. These rays are deflected by a magnet. The β rays are particles of matter traveling with a velocity of 100,000,000 meters a second, the particles are negatively charged, are deflected by a magnet and are moderately penetrating. These are the rays that are of value therapeutically. They are identical with the cathode rays found in the *x-ray* tube when in action. The γ rays are not particles of matter, but ether undulations. They travel with enormous velocity and are very highly penetrating, they having been found to pass even through metal. These undulations are in every way similar to the *x-rays* of a Crook's tube. No magnet can deflect them and the electroscope is not discharged by them as is the case with the α and β rays. In therapeutics, the β and γ rays are of value and the tissue changes brought about by them are similar to those produced by the *x-rays*. If mucous membrane growths are to be affected, particularly where limited areas are to be treated, radium will often serve the purpose more effectively than the *x-ray*, but both agents should be used if practicable. In malignant disease of the cervix, for example, the radium tube may be applied and the parts *x-*

rayed at the same time. In this way, better results will follow than after using but one of these agents.

While radiotherapy has not triumphed over malignant disease in all its forms, while it has not by any means displaced the enduring measures that surgery offers in these diseases, it has been the means of permanently eradicating some forms of malignant processes. X-radiations bring about tissue changes in neoplasms that are startling and in no small degree beneficial, and which place this therapeutic measure among the important remedial agents that our profession employs in curing disease, prolonging life, alleviating suffering, and modifying tempestuous pathologic states.

Case II of sarcoma of the uterus was a patient of Dr. S. Marx, whom I assisted at the operation, and by whose courtesy this report is made. He saw the case in consultation a few days before operation, the history being that the patient had missed her menstrual period and was overdue about two weeks, when a slight flow appeared and spotting continued for four weeks. The patient complained of abdominal pain, particularly referable to the left side. She was 25 years old, nulliparous, enjoyed otherwise excellent health. A bimanual examination revealed an enlarged uterus, with a mass in the left side of the pelvis. The mass was intimately connected with the uterus. A diagnosis of ectopic pregnancy, probably interstitial, was made. Examination under anesthesia revealed that the mass in the pelvis was a part of the uterus and that a few small fibroids also existed. On October 4, 1904, a free median incision brought into view an enlarged uterus studded here and there with small subserous fibroids, the main body of the mass being that in the left horn of the uterus. In liberating the left tube from adhesions the finger broke into a mass of soft broken down tissue, resembling the dark brown clots found in ectopic gestation. The broad ligament seemed to be invaded by the pathologic mass, which was supposed to be blood clots. After severing the uterine end of the tube, it was found that the mass in the broad ligament was a part of a mass invading the wall of the uterus. With an organ invaded by fibroids also, it was best to remove it by supravaginal amputation. Accordingly, after tying off the ovarian artery and round ligament on the right side and separating the bladder, the uterus was amputated supravaginally, and the whole mass removed, together with the adnexa. The cervical stump was sewed over and the whole denuded areas covered with peritoneal flaps, abdomen

closed in layers without drainage. The patient left the operating room in good condition, but within 48 hours evidence of sepsis appeared and the patient died four days after operation of peritoneal sepsis.

The pathological report of Dr. W. C. Clark, of the Laboratory of the Physicians and Surgeons, is as follows:

200 WEST 56TH ST., Nov. 2, 1904.

My Dear Dr. Grad:

The tumor which you were kind enough to send me for pathological examination has proved to be exceedingly interesting. The material consists of a uterus, cut off from the cervix, and one tube and ovary. The mucous membrane of the uterus is apparently in good condition. The body of the uterus is occupied by a large nodular, sloughing, friable tumor, which, on one side, extends a short distance into the broad ligament. I cut a section from the broad ligament through the tube; also a section through the more solid part of the tumor, and a third section from the most friable part.

Microscopically, the tumor is made up for the most part of muscular and fibrous tissue, in places quite edematous. The friable part has many muscle bundles and connective tissue strands separating masses of fibrin resulting from more or less recent hemorrhages. In among the coagulated blood areas are seen masses of very large spindle cells, separated from one another by a small amount of stroma. Some of these cells, where they happen to be cut transversely, are round in shape. Their nuclei are very large and coarsely granular. The cell body is homogeneous, staining easily with eosin. Blood vessels in the actual tumor are quite difficult to identify. I judge that many of the coagulated masses are occupying blood vessels with very poorly formed walls. The tumor cells run off into the surrounding tissue and in the slide cut from the solid part of the tumor, plugs and small masses of the same tumor cells are found. In addition to the above tumor cells, throughout all three of the slides there is found, here and there, about the blood vessels a certain amount of small round celled infiltration.

To conclude, I am certain the tumor is a malignant one, possibly grafted on or secondary to a fibroid of the uterus, and most probably a large spindle celled sarcoma. If the woman is young and has recently borne children, it might be called a deciduoma malignam. Kelly, in his book, second volume, page 334, speaks of sarcoma of the body of the uterus and says they are very rare.

This case of yours is different from his, in that he speaks of the absence of necrosis. He, Kelly, divides them into two groups; one group growing from the mucosa and the other from the parenchyma, yours coming in the second group. I hope you will publish this rare case.

I am sincerely yours,

WILLIAM COGSWILL CLARKE.

In Case II, while not positively to be stated as such, the malignant process was secondary to the fibroid. The vast number of sarcomata of the uterus are of this type. It is, however, possible that the malignant process had its beginning in the connective tissue cells. The fact, however, that the uterus harbored small fibroid tumors more or less all through its walls points to a strong probability that the sarcoma was engrafted on the benign neoplasm. The diagnosis of ectopic was made because much importance was attached to the history of delayed menses. Such a history of delayed menses with metrorrhagia and spotting are strong evidences of ectopic gestation in the vast number of cases. This case, however, illustrates that under rare and exceptional conditions even this very constant and almost pathognomonic symptom may be the misleading factor.

Case I was a sarcoma of the type that starts in the mucous membrane and then invades the entire organ, destroys the cervix and extends to the vagina. The case started as an innocent looking polypoid growth. In fact, I am informed by the husband of the patient that when the polyp was first removed and microscopically examined, it was reported as benign. Yet six months later an extensive return had occurred with rapid extension of the disease.

115 EAST 116TH STREET, NEW YORK.

PERSISTENT MENTOPOSTERIOR POSITIONS.*

BY

CHARLES B. REED, M.D.

Assistant Professor Obstetrics, N. W. University Medical School; Obstetrician to Cook County Hospital; Associate Obstetrician, Chicago Lying-In Hospital.

In the last quarter of the 18th century Deleurye and Zeller first called attention to the fact that face position should not be classed as dystocia, and in 1791 Boer published his classical thesis wherein he reported 80 cases, of which 79 were spontaneous, and thereon he definitely established the favorable character of the position.

*Read before the Chicago Gynecological Society, February 17, 1905.

The optimism of Boer and Zeller has been abundantly substantiated since their time and at present most observers include face positions among normal labors. In this favorable attitude, however, an exception is always made to the mentoposterior positions which, in general, may be said to include all those cases where the chin is located at a point posterior to the transverse diameter of the pelvis.

The entrance of the chin into one of the posterior quadrants has been frequently observed and it is probably quite often detained in this position for indefinite periods, or until spontaneously or artificially corrected; if, however, the correction does not occur, the chin will be driven downward in forced extension until the head becomes impacted at some point between the inlet and the pelvic floor.

That this mechanism can occur, has been vigorously disputed by some obstetricians, and it has been maintained also that even if the head should enter the inlet with the chin posterior, the further advance of the head to actual engagement is impossible unless anterior rotation takes place to such a degree that the chin attains a point anterior to the transverse pelvic diameter.

Carrying the argument logically forward it is maintained by many who admit the possibility of the engagement, that delivery under such conditions is absolutely impossible as the fetal head cannot pass the pelvis without a change of diameters.

Theoretically we must acknowledge that the outlook is not promising when one considers the size of the fetal head diameters which must pass the outlet. The principal objection as urged by Cazeaux and his followers is that on account of the shortness of the child's neck, the face cannot reach the pelvic floor under such conditions unless the thorax descends with the head into the pelvic cavity; hence rotation must commence before the chin reaches the pelvic floor or engagement even is impossible.

It is not to be denied that such anterior rotation is highly advantageous and should be attained in every case if possible. In reality such a rotation is the most common and the most happy termination of the position, and its failure to occur spontaneously is a positive indication for interference.

But in a majority of these cases the head does rotate spontaneously, in a smaller proportion rotation occurs in consequence of successful intervention, and in a certain percentage delivery of the unrotated head takes place.

In regard to Cazeaux's objection it must be said that the length

of the neck is to be measured, not from the hyoid bone, but from chin to sternum, and when the head is extended this distance, as given by most writers, averages 9 cm., while in forced extension, such as would be found in the cases we are considering, the average distance is increased to 10 cm. or more, as Hodge quite clearly shows.

In the mentosternal measurements of 50 mature babies, which were made for me by the internes in the "out service" of the Chicago Lying-In Hospital, the average was 8.75 cm. (the maximum being 11 cm. and the minimum 6 cm.). The average is thus only slightly smaller than that given by most observers (9 cm.). It is apparent then that while in a given case the minimal mentosternal measurement *might* happen to enter into relation with a contracted pelvis, yet with an average pelvis and an average fetus the transit of the head would be possible and this possibility according to the law of chances is much more apt to occur than the coincidence of the two small measurements. Furthermore, the measurements made on the living child outside the maternal parts by a careful attendant would be necessarily less than the same distance when subjected to the powerful uterine activities in obedience to the laws of expulsion whereby the forced extension is greatly intensified.

Since, therefore, the height of the pelvis even at the sides does not in general exceed 9 cm., the argument of Cazaoux is untenable. In cases where the chin is posterior and the head and pelvis present diameters of average size it is not at all impossible for the head to enter the superior strait, engage and pass on nearly to the floor of the pelvis, and if necessary the thorax will also now enter with the occiput to allow the head to descend further.

This arises, according to Hodge, from the fact that the upper portion of the pelvis is quite roomy, and also because it is the mere apex of the thorax and the posterior portion of the occipital bone which would be simultaneously engaged in the superior strait.

It must be remembered also that anatomically "if the neck of the child be much elongated, as it usually is in these cases, the suboccipital region of the head, which averages 4 cm., will simply extend along the cervical vertebræ and no part of the occiput will come in contact with the dorsal vertebræ, that is to say, that in such cases the portions of the child's head embraced between the pubis and the sacrum or the plane of the ischium on the one side and that on the other would be the thickness of the neck and

that of the occipital region of the head. The dorsosternal diameter may not be at all involved."

We believe, therefore, that it is theoretically demonstrable that deep engagement may take place in mentoposterior positions—does it actually occur in accordance with the theoretical possibility?

The clinical proof of its existence is to be found in the reports of competent observers who have witnessed the event, not alone the deep engagement which has been present in all of the 75 cases herewith reported, but also in seventeen of these cases which actually delivered with the chin posterior.

But after the head is deeply engaged the difficulty becomes more pronounced for a further increase in the extension cannot occur and the head will probably be detained or arrested at this point unless a change in the position takes place.

Nevertheless we must affirm that delivery under such conditions is not impossible as the unrotated chin may deliver over the perineum. In the 75 cases of impacted mentoposterior positions which are reported in my series, 17 or 22.6 per cent. terminated in this manner either by assistance or spontaneously.

So far as concerns the mechanical possibility of such a phenomenon, it makes no difference whether the event occur spontaneously or assisted by the forceps of the accoucher.

In this instance the head rests with the frontometal diameter extending along the posterior wall of the vagina; the trachelobregmatic extends backward from the pubis toward the sacrum, and the further mechanism is described by Chailly and Velpeau as follows:

"The chin passes the sacrosciatic ligament or coccyx, the perineum is pushed directly downward by the face of the child; a partial flexion of the head occurs, the chin passing under the posterior margin of the inferior strait while the os frontis, anterior fontanelle, posterior fontanelle, and finally the occipital protuberance pass under the subpubic ligament, the occiput rises up in front of the pubis and the delivery then proceeds like an original vertex position."

This mechanism was followed out exactly in the case observed and reported by Brandt.

The development of the head is greatly resisted by the pressure of the chin posteriorly against the perineum, and cannot occur without such a distention or laceration as will permit the entire occipitometal diameter, measuring 13 cm., to pass through.

In an examination of the cases herein reported, care was taken to avoid such as appeared doubtful, and to suitably provide against such inclusion, the cases collected were divided into three sections, the first of which included all the cases which delivered with the chin unrotated, the second contains all the impacted cases, and those wherein it was definitely determined and stated that engagement had occurred before interference was undertaken, while in the third class were placed those cases which were spontaneously corrected, together with those which were not impacted, those wherein engagement was not specified, and those where version was successfully done (except in two instances where the engagement was specified, and in one case that resulted fatally to both mother and child when version was attempted).

When version is attempted with the head fixed in the pelvis, the result is only exceptionally successful, and the limits of safety, both for mother and child, are usually widely overstepped, as in the instance just mentioned.

The French cases were so imperfectly reported that it was impossible to determine whether the head was fixed or not, but from the histories, one could only infer that most of them were corrected at the inlet, and usually by version, and in either case the results were statistically valueless, and were therefore included in Class III. For the same reasons the twelve cases reported by Ihm were included in the same class. Class III is therefore only a dumping ground for doubtful cases, and will not be further considered.

In the second class there are found 75 cases of deeply engaged or impacted heads, of which 17 were delivered unrotated, and these latter were segregated as Class I.

A careful examination of these 75 cases convinces one that the persistent mentoposterior position is quite rare, inasmuch as the posterior chin, whether primary or secondary, nearly always rotates forward. The rarity of the presentation is doubtless responsible in a large measure for the dread with which it is viewed by the obstetrician—a feeling that is not justified by the statistics, nor warranted by the maternal and fetal fatalities.

In order to determine approximately how dangerous this position is, let us briefly compare the results obtained in these impacted cases with the statistics of other obstetrical conditions, such as eclampsia, placenta previa, and prolapse of the cord, which are attended with considerable mortality, but are not re-

garded necessarily as "impossible," and where the hope is always present that one, and possibly both, of the patients may survive.

In my collection of 75 cases there was a maternal mortality of 11.6 per cent., and a fetal mortality of 40.6 per cent. (hydrocephalic child uncounted).

When these figures are compared with the results of the usual, or, if one may so term it, the normal face position, with the chin anterior, it is observed that these so-called "impossible cases," with deeply impacted head and chin posterior, exhibit a maternal mortality only 5 per cent. higher than in the normal face (which is usually given at about 6 per cent.), but with this disadvantage, that the figures in the mentoposterior cases cover everything from the time of Smellie to the present, while the 6 per cent. represents only the antiseptic era.

In placenta previa the mortality is given by Holmes as 12 per cent. for the antiseptic era, or almost exactly that of mentoposterior cases, while in eclampsia the mortality is approximately twice as high.

Hence from the standpoint of maternal fatality, mentoposterior positions, with the mixed statistics of the last hundred years, take rank with placenta previa and conservative C. Sect. of the aseptic era and exhibits approximately one-half the mortality found in eclampsia.

What are the consequences for the babe?

When we consider that the obstetrical literature of a century has unanimously assured us that these children invariably die, a considerable interest must appertain to these figures. In my series 40.6 per cent. of the babes die from all causes. The latest, and probably best figures on fetal mortality in placenta previa (Holmes) is given at 50 to 80 per cent., eclampsia, 35 to 50 per cent. Hence results compare favorably with the lowest of these.

On the other hand, the mortality is considerably greater than in breech cases (10 per cent.), C. Sect. (10 per cent.), and mento-anterior (14 per cent.) of the aseptic era.

	FACE.		Placenta previa.	Eclampsia.	Prolapsed cord.	Breech.	C. Sect.
	Mento-anterior.	Mento-posterior.					
Maternal mortality.	6%	11.6%	12%	20.25%		?	12%
Fetal mortality.	14%	40.6%	54%	35.50%	50.80%	10%	10%

While by this association we recognize the seriousness of the emergency which an impacted posterior chin presents, we do feel

that the alarm is greatly exaggerated, and that the figures given are capable of considerable reduction under a systematic and logical aseptic management. Then again, we consider that with such unfortunate traditions clustering around these cases, it is not strange that the physician's mentality should be clouded by the enviroined horrors of a case which no previous experience of his own, and no traditional or systematic tutelage from his forbears has prepared him to meet, but rather has developed in him a feeling that such a problem is incapable of satisfactory solution.

Let us consider more in detail the cases which demonstrate the possibility of the passage of the head through the pelvic outlet without previous anterior rotation.

In our series of 75 cases this event occurred 17 times, or nearly one-quarter (22.6 per cent.) of the total number of impacted heads reported. There are many who have demonstrated theoretically to their own satisfaction that such an event is impossible. But how can we meet the clinical evidence of the actual phenomenon, when witnessed by such men as Carl Braun, Smellie, Braxton, Hicks, Milne-Murray, Wichert, Leopold, Flügel (case quoted by Winckel) and others? The literature is full of criticisms on these cases, whereby the writers attempt to show that what the observer really saw was something else, but the concurrence of the evidence, the multiplication of instances, and the great competency of the observers, place the actuality of the phenomenon beyond question, although many of the histories are not so full as the cases would justify.

It is truly unfortunate that the weight of the child is given only occasionally, and we are therefore deprived of the advantage of comparison; but in the cases where the weight is given, the children were normal or above, except one of Smellie's cases, where he specifically states that the child was small and thin; thus in Milne-Murray's case, the child weighed $10\frac{1}{2}$ lbs.; Jacobs reports 4,000 grms., and Hicks says the child was of average size; in Köhler's case the child was mature and well developed. In Braun's second case the weight was 3,000 grms.

That the children were mature or nearly so is confirmed by the fact that over three-fourths of the babes lived.

Out of 8 forceps cases, one mother dies and two babes, while of the spontaneous deliveries, all the mothers (9) lived, and only two babes died, so that out of 17 cases where the child was delivered with chin posterior, it cost the lives of but one mother and four babes.

The infant mortality (23.5 per cent.) therefore in these cases that passed unrotated, and which have been said to be invariably fatal, is lower than in placenta previa, eclampsia or prolapsed cord by from 10 to 50 per cent., while it is only two and one-half times the mortality as generally accepted for normal breech cases.

It would therefore appear that the fatalities in these cases have been greatly overestimated. Before proceeding to the discussion of the management it is desirable to briefly summarize the results found in the series of cases herewith submitted:

Primipara, 25; multip., 32; not stated, 18; total, 75.

Positions.—M. R. P., 27; M. L. P., 21; sacral 21; not stated, 6.

Rotation.—Manual succeeds, 4 (Volland 1); fails, 9 (Volland 4); forceps succeeds, 25 (33 1-3 per cent.); fails, 16 (21 per cent.).

Manual Flexion.—Fails 5 cases (1 Thorn); succeeds, 12 (16 per cent.); vectis succeeded in two of the three cases tried; version tried in vain in four cases.

Delivery.—Unrotated, 17; spontaneous after correction, 10; forceps succeeded, 28 (37 per cent.); failed, 3; axistraction forceps succeeded, 3; failed, 0; craniotomy, 14.

Mortality.—Mothers live, 61; die, 8; not stated, 6; babes live, 39; die, 30; not stated, 6.

Management.—The various methods advocated for the relief of the mentoposterior position may be appropriately considered in relation to the degree of descent of the head whether at or in the inlet, or passed beyond it to deep engagement.

Although it is generally accepted that face positions, when diagnosed above the inlet, do not necessarily enter the inlet and remain as face positions, yet it is regarded as good practice to correct such face position, if possible, before engagement, and a number of maneuvers have been advocated and developed by obstetricians to secure such correction, such as the external manipulation of Schatz, the internal manipulation of Baudelocque and the combined external and internal method of Thorn, the two latter being also applicable to the head when it is lower down.

When the chin is anterior before engagement, no interference should be attempted, as the result can only be an occipitoposterior, which is as bad or worse than the face. However, if correction seems to be definitely indicated, either the Schatz or Thorn maneuver may be tried, and in case of failure by these methods, a version can be done later, when the requisite conditions are present.

With the chin posterior and the head not engaged (high up and movable), the head can be brought into a state of flexion in relation to the fetal axis by the Schatz or Thorn maneuver; of these, the latter is doubtless the best, and it may be briefly described:

The chin, face and forehead are forced up in succession by one hand in the uterus, while with the external hand the shoulder is pulled toward the back, so as to make the anterior surface of the fetus concave. Meanwhile the hand of an assistant pulls the breech to the side opposite to that to which you pull the shoulders. The woman is then placed on the side toward which the occiput points to await the delivery.

The indications for this maneuver are quite rare, and the conditions are almost always more satisfactorily met by a version. The method of Baudelocque, or De Lee's manual correction, may also be tried previous to either the Thorn or the performance of the version. By the Baudelocque maneuver the occiput is pulled down and the chin pushed up, so that the vertex presents. If the cervix is completely dilated and the head not fixed, or if the cervix will admit two fingers, version is the operation of election if interference is indicated.

After the fixation of the head in the pelvis the situation is much harder to contend with. Fortunately, in a majority of cases the chin rotates forward, and the case terminates as the ordinary face position. When the impaction persists, or some indication arises for delivery, interference is urgently indicated, and version can rarely be considered, since it is highly dangerous and very difficult, if not impossible of performance. Theoretically, it would be best to attempt first of all to convert the posterior chin into an occipitoanterior position by flexion, and the statistics show that in reality this is a favorable maneuver, for out of 17 cases in my series, 12 succeeded.

The method of Baudelocque or some modification thereof, is most satisfactory, and is conducted as follows: The operator stands on the side of the fetal occiput, passes the hand corresponding to the face of the child to the upper jaw, or grasps the whole face and forces it away from the pelvic inlet in the direction of the chin, while the external hand presses the occiput down towards the pelvic strait. Before the removal of the hand in the uterus the operator should assure himself that the large fontanelle actually stands higher than the small one, and that the occiput is completely within the small pelvis.

Or the operator stands on the side toward which the chin and

breast lie and passes the hand that corresponds to it over the occiput, grasps it completely and pulls it down with an even traction, while with the external hand he pushes the chest of the child from below upward and to the opposite side. These methods have succeeded many times and are worthy of confidence.

The most important part of the maneuver is the pushing up of the chin, since much more space is thereby acquired in the pelvis, and the descent of the head is made possible. If, after repeated efforts, this maneuver fails, an effort should next be made to bring the chin forcibly forward, and thereby produce the usual face position. Hodge, in 1863, first recommended that the chin be brought forward by pressure steadily applied against the side of the head near the parietal protuberance, whereby the head, constituting the long arm of the lever, was pushed around and back, and the chin meanwhile came forward.

Volland, in 1894, improved upon this method by carrying the hand into the vagina until one or two fingers or the half hand grasped the chin on its posterior surface, and then by direct traction brought the chin forward. Success attends the maneuver often enough to justify its routine employment after the failure of the attempt to produce flexion as an aid to rotation. We might also suggest that a fillet or small rubber hose could be looped over the chin, and while traction is made upon the fillet externally, the proper hand could be employed in executing the Hodge maneuver internally, the combined activities being employed in conjunction with the uterine contraction.

The attempts at flexion or rotation may be made without anesthesia, but success is more probable if complete relaxation has been secured. If done without narcosis, the knee chest or Trendelenburg position will be found to be a valuable aid. The operator is furthermore in a position to immediately follow the possible failure of the maneuver previously described by a trial of the forceps.

In the series reported the vectis was successful in two of the three cases in which it was tried, and for this purpose one blade of the forceps could be utilized, but the great leverage that is possible under these circumstances would threaten the integrity of the soft parts, and in reality be capable of as much danger as the forceps, without a corresponding success. Furthermore, the lever would not be likely to succeed if the fingers failed.

Although the operation has the support of many obstetricians, I believe, nevertheless, that it is contrary to the modern spirit of

obstetrics to rotate the head into a new position by means of the forceps, on account of the great danger to the soft parts. Where rotation is thus attempted, it is highly advantageous to employ forceps with a very small pelvic curve, such as the straight instruments used in France. The Elliott and Simpson and other forceps which are so generally used in America, Great Britain and Germany, have such a pronounced pelvic curve, that in using them as rotators, there is great danger of injuring the soft maternal parts. In the case reported by Popescule the mother was lost, and from his experience in this case he strongly advises against the use of forceps. There is great danger in the use of this instrument that the vagina may be cut by the ends of the instrument, or torn from its attachments to the uterus or from its adjacent fascia, while in those cases where the vagina closely grasps the fetal head, deep lacerations are probable, with consequent danger of infection and invalidism.

The temptation to apply forceps in such cases is very strong, but in Salomen's collection of 18 cases of laterally directed chin, wherein forceps were used to rotate the chin anteriorly, only one living child was reported. This may well cause us to pause and analyze our own series. Out of 41 cases, the forceps failed to rotate 16 times, and succeeded in 25 cases. Of the mothers, all lived but four, so that, as far as the maternal mortality is concerned, there is no contraindication.

Of the 25 successful cases, 8 babes (32 per cent.) die and 14 live (56 per cent.). This seems promising as regards the babe, if these cases do not represent the less serious one of the series, as they probably do. The forceps failed in 16 cases and all the mothers lived. That the attendant was not faint-hearted in these cases and desisted early is shown by the fact that 12 babes died and only 3 lived (one hydrocephalic not counted).

Out of a total of 40 cases (hydrocephalus uncounted), 17 babes live and 20 die, a far better percentage than Salomen obtained in his series. The operation is evidently a very serious one for the child, since 50 per cent. die, apparently as a result of the forceps operation, still it does not corroborate the opinion expressed by Salomen, to wit: "Either the forceps operation is impossible, or, if possible, the child will be born dead."

In the light of the above cases we again think of forceps—not, however, as rotators primarily, but as tractors—in the hope that by adding a *vis a fronte* to the pains, the chin may rotate anteriorly, and in addition as a last effort to deliver before re-

sorting to the mutilating operations. Not more than three or four trial tractions should be permitted, for of what use is a serious operation if the child dies? In all cases the axistraction instrument should be employed.

If the chin is directly behind, the blades are applied to the sides of the pelvis, while an oblique position of the long facial axis would indicate the oblique application of the blades, if possible, the posterior blade passing behind the chin.

In the three cases in which the axistraction forceps were used, only one babe died. The usual conditions for the forceps operation must be observed very carefully, and especially should the child be in good condition, and every detail of the operation executed with the utmost circumspection. If, however, the child is living, and the efforts hitherto carefully made have failed to break the impaction, the choice rests between craniotomy on the living child and symphyseotomy. In this question let us first consider the child, which by perforation is utterly lost. The long labor, the various manipulations and attempts at correction, as well as the prolonged compression, have undoubtedly weakened the child's vitality, and consequently, even with a symphyseotomy and subsequent correction of the position of the head with extraction, the life of the child may be sacrificed either during the delivery or very shortly thereafter, as occurred to Montgomery, who, so far as I know, is the only one who has done symphyseotomy for this complication.

Since we are doing the operation solely in behalf of the child, we should be quite certain that its vigor justifies us, for the mother is exposed to considerably more danger from infection, shock, etc., than when craniotomy is performed. For a slightly increased possibility of having a living child, the risk for the mother is greatly intensified. We substitute an operation with a maternal mortality of about 10 per cent. for an operation where the mortality is practically nil, in behalf of a child that under the most favorable conditions has only one chance in five for reaching maturity.

Besides this, Rubinrots' analysis shows a morbidity for symphyseotomy that is very large, not less than 30 per cent. being septic, and many complications occur, such as abscess, fistula, incontinence of urine, paresis of bladder, hematoma, etc.

Hence I believe that unless the manipulations have been very carefully performed, and the woman and child are in excellent condition, and the facilities for the performance of symphyse-

otomy in an ideal environment are present, that perforation and cranioclasia is the operation of election under the circumstances.

Whatsoever method of intervention is adopted, it is always desirable to operate before the patient has become too greatly exhausted. The principle of "watchful expectancy," carried out in the hope of a spontaneous forward rotation of the chin, should not be permitted to restrain one too long from operations necessary to the preservation of the lives of mother and child.

From a review of these cases, I believe we are justified in stating:

(1) That engagement of the face in mentoposterior positions does occur, and that the face may reach the pelvic floor without anterior rotation.

(2) In almost all cases the anterior rotation spontaneously occurs.

(3) Failure of chin to rotate anteriorly is a definite indication for interference.

(4) In entering the pelvis, the length of the child's neck may permit the head to sink well down into the pelvis before the thorax is involved.

(5) That delivery of the unrotated chin, although extremely rare, is by no means impossible, and occurred in my series in 22.6 per cent. of the impacted cases.

(6) In 75 cases of impacted mentoposterior position, the maternal mortality (11.6 per cent.) under all circumstances about equals the maternal mortality (12 per cent.) of placenta previa under aseptic conditions.

(7) The fetal mortality under all conditions is only a trifle higher than the fetal mortality of intrapartum eclampsia under the best and most modern conditions, and is far better than the reputed (100 per cent.) mortality.

(8) In the management, the position must always be corrected if the rotation does not occur spontaneously.

(9) Version is the operation of election if the head is not engaged and manual flexion has failed.

(10) Version is contraindicated after engagement.

(11) Manual correction by the Baudelocque, De Lee, Thorn or Volland methods should always be attempted.

(12) Forceps should be used with the utmost caution, if at all, and as a last resort before mutilating operations, for the fetal mortality is very high (50 per cent.), and if employed, only the axis-traction instrument should be chosen.

(13) If symphyseotomy is done, care should be taken to operate while the child is vigorous enough to justify it.

(14) Asepsis in the conduct of these cases ought to show a considerable reduction in the mortality figures.

CLASS I.

No. 1.—Smellie. Mentopost; no rotation; child delivered spontaneously with chin over perineum; child small and thin; both lived.

No. 2.—Smellie. M. L. P.; rotation by forceps failed; unrotated chin delivered over perineum by forceps; mother lived, child died.

No. 7.—Köhler. No anterior rotation; delivery spontaneous; chin over perineum; both lived; child fully developed.

No. 9.—Meachem. I para M. D. P.; unrotated; delivery spontaneous, with chin posterior; both lived.

No. 10.—C. Braun. Unrotated M. posterior; delivery spontaneous with chin posterior; mother lived, child died; in labor thirty hours.

No. 11.—C. Braun. M. Post. unrotated; forceps delivery, chin over perineum; both lived; weight of child, 3,000 grms.

No. 13.—Jacobs. I para, M. L. P.; rotation by forceps failed; delivery spontaneous, and unrotated head first; complete rupture of perineum; mother lived, child (weight 4,000 grms.) died.

No. 14.—Dodd. I para M. D. P.; unrotated; delivery by forceps, with chin posterior; both lived; labor for three days.

No. 17.—B. Hicks. M. L. Tr.; unrotated; delivery by forceps, with chin transverse; both lived.

No. 18.—B. Hicks. II para; M. Post.; attempts at rotation failed; delivery by forceps, chin posterior; both lived.

No. 27.—Milne-Murray. M. Post.; rotation and delivery by axistraction forceps; face appeared in transv.; mother lived, child died; weight 10½ lbs. (5,250 grms.).

No. 33.—Rasch (Leopold). I p.; M. D. P.; spontaneous delivery unrotated, with chin posterior; both lived.

No. 43.—Flügel (Winckel). Unrotated spontaneous delivery.

No. 53.—Steinbuechel. I para.; M. D. P.; unrotated forceps delivery; both died.

No. 55.—Steinbuechel. II para; delivery spontaneous unrotated; both lived.

No. 63.—Wickert. III para; M. P.; delivery by forceps unrotated; both lived.

No. 68.—Brandt. I p.; M. D. P.; attempt to rotate with forceps failed; delivery unrotated spontaneous; forehead first; complete laceration; both lived.

CLASS II.

No. 3.—Szokalsky. III; M. L. P.; manual rotation fails, version fails; rotation and delivery by forceps; both lived.

No. 4.—Avrard. I; M. D. P.; manual rotation fails; craniotomy; mother lived.

No. 5.—Landsberg. XII; M. L. P.; rotation and delivery by forceps; both died.

No. 6.—Landsberg. VII; M. L. P.; rotation and delivery by forceps; both lived.

No. 8.—Meigs. II; M. L. P.; forceps in vain; rotation by vectis; delivery spontaneous; both lived.

No. 12.—Fraeys. I; M. L. P.; rotation and delivery by forceps; both lived.

No. 15.—Rogers. M. P.; attempts at flexion in knee chest position failed; Baudelocque succeeded; delivery spontaneous; mother lived, child died.

No. 16.—McNab. IV; M. D. P.; podalic version failed; craniotomy; mother lived.

No. 19.—Perrucot. IV; M. L. P.; manual flexion; delivery spontaneous; both lived.

No. 20.—Fochier. M. D. P.; forceps in rotation failed; craniotomy; mother lived.

No. 21.—Boussuge. I p.; M. D. P.; forceps rotation and delivery; both lived.

No. 22.—Humphry. I p.; M. P.; manual flexion; delivery spontaneous; both lived.

No. 23.—Richardson. II; M. D. P.; forceps rotation to right failed; to the left "over rotation" succeeded; forceps delivery; both lived.

No. 24.—Reamy. III p.; M. D. P.; manual and forceps rotation failed; craniotomy; mother lived.

No. 25.—Stern. II p.; M. D. P.; rotation by hand and one blade of forceps; spontaneous delivery; both lived.

No. 25.—Boisleux. III; M. D. P.; forceps rotation and delivery; mother lived, child died.

No. 26.—Mann. III; M. D. P.; Schatz Baudelocque correction; forceps delivery; mother lived, child died.

No. 28.—J. d'Accouche. II; M. L. P.; correction by forceps or version fruitless; craniotomy; mother lived.

No. 29.—Caballero. Multip. M. L. P.; craniotomy; C. Sect. to remove trunk of fetus after craniotomy; both died.

No. 30.—Annal de Gyn.; I p.; M. L. P.; rotation and delivery by forceps; mother lived, child died. (Hydrocephalic.)

No. 31.—Grenzer. I p.; M. D. P.; rotation and delivery by forceps; mother lived, child died.

No. 32.—Khory. I p.; M. D. P.; axistr. forceps in vain; craniotomy; both died.

No. 34.—Hertoghe. XII p.; M. L. P.; manual flexion; delivery spontaneous; both lived.

No. 35.—Candela. VII p.; M. L. P.; forceps rotation; spontaneous delivery; mother lived, child died.

No. 36.—Pippinskold. XII p.; M. P.; Baudelocque correction; both lived.

No. 37.—De Soyre. Multip.; M. D. P.; rotation and delivery by forceps; both lived.

No. 38.—Depaul. I p.; M. D. P.; head deeply engaged; forceps twice in vain, arm and cord prolapsed; craniotomy; mother lived.

No. 39.—Gueniot. I p.; M. L. P.; forceps rotation; both lived.

No. 40.—Bailly. I p.; M. D. P.; rotation and delivery by forceps; both lived.

No. 41.—Depaul. II p.; M. D. P.; rotation by forceps failed; craniotomy; mother lived.

No. 42.—Blot. I p.; M. D. P.; rotation and delivery by forceps; mother died of sepsis, child lived.

No. 42a.—Salomen. I p.; M. D. P.; forceps rotation and extraction failed; craniotomy; mother lived.

No. 42b.—Salomen. I p.; M. D. P.; forceps rotation and delivery; mother lived, child died.

No. 42c.—Dührssen. II p.; M. D. P.; manual correction failed; forceps rotation failed; forceps delivery failed; craniotomy; mother lived.

No. 44.—Ehrendorfer. I p.; M. L. P.; forceps rotation; both lived.

No. 46.—Bernardy. M. P. Manual rotation; craniotomy; mother lived.

No. 47.—Schaller. XI p.; M. D. P.; rotation and delivery by forceps; both live.

No. 48.—Baldwin. Multip.; manual flexion; spont. delivery; both lived.

No. 49.—Lewers. M. P.; axistraction rotation and delivery; both lived; ordinary forceps fail.

No. 50.—Baldwin. I p.; M. P.; forceps rotation failed; manual flexion; craniotomy; mother lived.

No. 51.—Poitou Duplessy. I p.; M. P.; forceps rotation and delivery.

No. 52.—Marx ('94). IV p.; M. P.; manual correction; forceps delivery; both lived.

No. 54.—Fayolle. IV p.; M. L. P.; Volland rotation; spont. delivery; both lived.

No. 56.—Gossmann. M. P.; manual correction fails; forceps delivery; mother lived; child died.

No. 57.—Jungmann. III; M. D. P.; manual flexion; forceps delivery; both lived.

No. 58.—Gomberg. M. P.; head fixed in pelvis; forceps slipped repeatedly; podalic version; both died.

No. 59.—Zahn. M. P.; Volland, then one blade of forceps passed in behind; delivery by forceps; both lived.

No. 60.—Zetschnitz. Mentopost; Volland maneuver, then forceps; results not given.

No. 61.—Lewers. M.post; rotation during delivery by axistraction after failure by ordinary forceps; both lived.

No. 62.—Popescule. M. D. P.; rotation and delivery by forceps; mother died, child lived.

No. 64.—Swain. M. L. P.; Volland in vain; flexion fails, forceps fail; head deeply wedged in pelvis forcibly pushed up; flexion, version, extraction; both lived.

No. 65.—Ziegenspeck. III; M. D. P.; manual flexion failed at first; Baudelocque succeeded; delivery by forceps; both lived.

No. 66.—Tate. II; M. L. P.; manual flexion failed; manual rotation succeeded; delivery by axistraction forceps; mother lived, child died.

No. 67.—Michelson. Multip.; M. L. P.; head on pelvic floor; rotation by repeated application of forceps; delivery by forceps.

No. 69.—Thorn. I p.; M. Trans.; manual rotation fails; rotation by forceps; delivery by forceps; both lived.

No. 70.—Hamilton. II p.; M. L. P.; spontaneous rotation to transv. impacted; forceps fail; craniotomy; mother lived.

No. 75.—Montgomery. I p.; M.post; head deeply engaged; manual rotation and flexion both failed; forceps failed; symphyseotomy; child died a few hours after labor; mother lived.

No. 12a.—Poppel. I p.; M. L. P.; transv. in outlet; forceps in left oblique; easy rotation and delivery; both lived.

BIBLIOGRAPHY.

A.

Ayre: Bost. M. & S. J., 1879.
 Avrard: J. de Chir., 1846, IV, '92.
 Annal de Gyn., 1883, p. 180, Vol. XIX.

B.

Bayer: Volkmanns Sammlung, 270, 1886, Gynec. 70.
 Brennecke: Berlin klin. Woch., 1882.
 Brom: London Lancet, 1890, I, 1298.
 Bernardy: J. Am. Med. Asso., 1891, XVII, p. 94.
 Boussuge: Lyon Med., XXII, 152.
 Bossi: Annal de Ostet. Milan, 1887.
 Budin: Bull. et Mem. Soc. Obst. Por., 1893.
 Boer: Lieben Bchr., 1834, Buch III, p. 170; Muller's Handb., Vol. II, p. 716.
 Brandt: C. f. G., Bd. XXVI, p. 1159.
 Brouha: Bull. et Mem. de la Soc. de Chir., Por. 1900, Oct.
 Bishop: Bost. M. & S. J., 1882.
 Braun, C.: Monat. f. Geb., 1861.
 Boisleux: Quoted by Salomen.
 Bailly: Arch. de Tocol, 1887.
 Blot: Arch. de Tocol., 1887.
 Baldwin: AM. J. OBSTET., 1892.
 Bullitt: Med. Record, 1894.

C.

Cramer: C. f. Gyn., 1885.
 Clark: Cleveland Med. J., 1903, II, 182.
 Croom: Edin. M. J., 1879-80.
 Cremer: Br. Med. J., 1884, I, 948.
 Currie, Edin. Med. J., 1883-4.
 Chambrelet, Rev.: Med. de Toulouse, 1890, 139.
 Charles: J. d'Accouche Liège, 1892, 1882.
 Caballero: An. d'circ. Med. argent, 1883.
 Candela: Prog. Gynec., 1886-8, II, p. 354.

D.

Dodd: Trans. Med. Soc. N. J., 1865.
 Dagonet: Prog. Med., 1884.
 Dick: Br. M. J., 1883.
 Davis: Med. News, 1894.
 Depaul: J. de Sages Femmes, Par. 76-7, II, 65.
 De Soyre: Arch. de Tocol, 1887.
 Depaul: Arch. de Tocol, 1887.

E.

Ehrendorfer: Arch. f. G., 1890.

F.

- Flügel: Quoted by Winckel.
 Fritsch: Berl. klin. Woch., 1872.
 Fochier: Lyon Med., 76, XXIII, 228.
 Fraeys: A. Soc. de Med. de Gand, 1861, 108.
 Fayolle: J. de Sages Femmes, 1894.

G.

- Grenzer: C. f. Gyn., 1884, p. 174.
 Gossmann: Munich M. Woch., 1895.
 Gessner: Ztsch. f. Geb. a Gyn., 1897.
 Gueniot: J. de Sages Femmes, Par. 1880.
 Goldschmidt: I. D. Marburg, 1890.
 Gomberg: Atlantic M. Monthly, 1897.

H.

- Hartoghe: Am. de Soc. Med. d'anvers, 1885.
 Hirst: Univ. Med. Mag., Phil., 1891.
 Hamilton: Univ. Med. Mag., Phil., 1891.
 v. Hecker: Arch. f. Gyn., Bd. XX.
 Haultain: Edin. M. J., 1884, 5.
 Habit: Wien. Med. Presse, 1890, XXI, 1582.
 Hamon: Annal. de Soc. Med. d'ancers, 1887-8.
 Hicks, B.: Trans. Lond. Obst. Soc., 1873.
 Humphry: Am. Jour. Med. Sci., 1877.

I.

- Ingersoll: Trans. Ill. Med. Soc., 1883.
 Ihm: Inaug. Diss. Berlin, 1895.

J.

- Jacobs: Deutsch Klinik, 1863.
 Jewett: Trans. Am. Gyn. Soc., Phil., 1894.
 Jungmann: Arch. f. Gyn., Berl., 1896.
 Journal d'Accouche, Liège, 1882, III, p. 241.

K.

- Khery: Tr. Med. & S. Soc., Bombay, 1884.
 Köhler: Verhandl. der Gesell. f. G., Berlin, 1852.
 Kellosser: Inaug. Diss. Halle, 1880, C. f. G., 1880, No. 21.
 Kern: 1885, Marburg.
 Keller: Am. J. M. Sci., 1860.

L.

- Leopold: Resch. C. f. G., 1885, p. 123-734.
 Landsberg: N. Ztsch. f. Leb., Berl., 1851.
 Lange: Berl. klin. Woch., 1884, 413.
 Lafforgue: Gaz. Obst., Par., 1879.
 Lewers: Clin J., Lond., 1892.
 Lewers: Trans. Lond. Obst. Soc., 1899.

M.

- Montgomery: Trans. Ill. State Med. Soc., 1904.
 McNab: Glasgow M. J., 1868.
 Meachem: Med. S. Rep., Phil., 1859-60.
 Markoe: Northwestern Lancet, St. Paul, 1855-6.
 Magnier: Gaz. Med. de Picardie, 1896.
 Marx: N. Y. J. Gyn. & Obst., 1894, V. 29.
 Michelshon: St. Petersburg Med. Woch., 1901.
 Merkel: Arch. f. Gyn., 1883.
 Mangielli: C. f. G., 1885-6.
 Mackey: AM. J. OBSTET., 1888.
 Meigs: Treatise on Midwifery, 1856.
 Mann: J. C. f. G., 1880.
 Milne-Murray: Edinb. M. J., 1882.

N.

- Nicholson: Detroit Lancet, 1884, p. 49.
 Neumann: Diss. Erlangen.

O.

- Opitz: Ztsch. f. Geb. u. G., Bd. XLV, Hft. I.
 Oliver: Bull. et Mem. Soc. Obst., Par., 1887.

P.

- Palmer: Cincin. Lancet Clin., 1871.
 Partridge: AM. J. OBSTET., 1884.
 Price: Am. Pract. & News, 1892.
 Phillips: Tex. Cour. Rec. Med., 1889-90, p. 64.
 Putnam: Med. World, Phila., 1884.
 Peters: Beitrz. Klin. Med. u. Chir., 10.
 Pippingskold: Beitr. Z. G. u. G., Bd. I, Berlin.
 Peters: Wien. Klin. Wch., 1895, VIII, 450.
 Perrucot: J. de Sages Femmes, Paris, 1873-5.
 Poitou-Duplessy: Annal d G. et Obst., Vol. XXXVI.
 Popescule: C. f. G., 1900.
 Poppel: f. Geb. u., Bd. 24, 1864.
 Parmentier: J. de Sc. Med. de Lille, 1883.

R.

- Rundo: 1896, Fremmels Jahreshb.
 Rasch: C. f. G., 1885.
 Reynolds: AM. J. OBSTET., 1894.
 Rogers: Med. Rec., 1866-7.
 Richardson: Bost. M. & S. J., 1877.
 Reamy: AM. J. OBSTET., 1877.

S.

- Steinbuchel: Stern u. Gesichts lage., 1894.
 Swain: Bost. M. & S. J., Vol. CXLIV, p. 353.
 Schatz: Encyclo. d. G. u. G.
 Schatz: Arch. f. Gyn., 1885.

- Scrader: C. f. G., XXIII.
 Spencer: Trans. Lond. Obst. Soc., 1899.
 Szokolaski: Annal de Med. de Gand, 1845.
 Salomen: Berlin, 1890.
 Schaller: E. Karros Halle.
 Schuuhl: Rev. Med. de l'est Nancy, 1889.
 Smellie: Treatise on Midwifery, 1784.
 Stern: M. & S. Rep., 1878.

T.

- Tate: AM. J. OBSTET., Nov., 1901.
 Trans. Edinburg Obst. Soc.
 Taylor: Cincin. Lancet Clinic, 1884.
 Taylor: Phila. Med. Times, 1882.
 Thorn: Samuel Klin. Vortr., 1902, 339.

V.

- Volland: Therap. Monat., Aug., 1894.

W.

- v. Weiss: Volkmanns Samml., 1893.
 v. Winckel: Textbook (Edgar).

Z.

- Ziegenspeck: Volkmanns Sammlung, 1886.
 Ziegenspeck: Wien. Med. Presse, 1897.

103 STATE STREET, CHICAGO.

THE YEAST TREATMENT OF ACUTE AND CHRONIC VAGINITIS AND ENDOCERVICITIS.*

BY

HELIODOR SCHILLER, M.D.,

Chicago.

WITH the inauguration of the treatment of chronic gonorrhea of women with yeast, Landau opened an almost new field for our therapeutic proceedings. Bacteria or their direct or indirect products, and yeast itself were for many years a most valuable part of our therapeutic means, but the way in which Landan has made use of the blastomycetes is certainly original. Landan thought that with the introduction of yeast into the vagina, and the use of relatively large quantities of fresh cultures of a non-pathogenic microorganism with powerful energy, he could substitute the gonococci or other pathogenic bacteria could crowd them out. Therefore, he called his method an antagonistic one; the blastomycetes having done their work, it was an easy matter

* Read before the Chicago Gynecological Society, February 17, 1905.

to remove them entirely. It was evident to him, at the same time, that this mechanical action alone could not be the only factor, and by experiments and experience he came to the conclusion that besides the mechanical action, the chemical products of the yeast were at hand for an explanation of the good results that he obtained. The quickly growing blastomycetes would deprive the other bacteria of the necessary water and food; would produce a peptogenic ferment which would be able to deaden other bacteria; would change the reaction of the vagina and their products, and would be able to neutralize the toxins of the pathogenic bacteria. It can be readily seen that there is no question of the depriving of the other pathogenic bacteria of food and water, as there is enough of both in the vagina. Another explanation given, which is more plausible, is that the process of self-cleaning of the vagina is assisted by the yeast. The bactericidal and curative powers of yeast are proven. The question is which are the bactericidal and curative agents. The bactericidal power of simple growing yeast and that of yeast which is in a medium where it produces fermentation in a sugar or maltose solution, "Bierwürze," and by this fermentation alcohol and CO_2 , must be divided. We will only take the latter into consideration, as the only subject which interests us and as the proof of bactericidal action of simple growing yeast has not been attained.

What are the bactericidal powers? The first and the most apparent seems to be the process of fermentation produced by the zymase. By the process of fermentation alcohol and carbon dioxide are produced; it is clear that dependent upon the concentration the alcohol would be able to have some bactericidal power, particularly increased by being in the nascent state. But even with this stronger action from the alcohol alone the bactericidal power could not be expected; a concentration of more than 2 or 3 per cent. can hardly be reached and this concentration would not be enough. The part which CO_2 plays in this direction is uncertain. Generally CO_2 does not disturb the growing of bacteria. On the other hand CO_2 produces local hyperemia and with this a local leucocytosis, a process favorable for a curative action. Some authors believe that the proteolytic ferments which the yeast contains, ferments like trypsin, have a bactericidal power. I have found only little peptogenic ferment in the yeast which we use. When I say yeast, I mean beer yeast, it is *saccharomyces cerevisiæ* or *pastorianus*, the yeast which can be obtained from the breweries.

The gelatine hardly becomes softened, seldom liquefied; further, it is a matter of experience that peptogenic enzymes are not very bactericidal, which is shown by the enormous amount of bacteria in the intestinal canal. In order to decide exactly the part which the proteolytic enzymes play in the bactericidal action of yeast it would be necessary to determine the bacteriolytic power of them, and whether they are uniform or heteroform enzymes, which means whether they have only the power to dissolve their own or also other bacteria. Some of my experiments allow me to draw the conclusion that the bacteriolytic power of these enzymes is not a large one. Yeast contains a relatively large amount of proteid nuclein, which as we know is strongly bactericidal and which has the power of producing leucocytosis and with this favorable conditions for a curative action. Different authors who have tried to explain the bactericidal agents by experiments by laboratory work, have obtained various and contradictory results. For instance: Abraham added to a pure culture of gonococci in bouillon 1 part of a pure culture of yeast. After 2, 4, 6, 8, 16 hours he took a drop of this culture and made agar glycerin plates, and found after 8 hours only yeast and no gonococci in the plates. He mixed parts of vaginal discharge containing gonococci and yeast in bouillon and also found that the gonococci disappeared. Now, every one knows that gonococci will not grow (at least not well) on simple glycerine agar and the outcome of experiments of this kind is therefore self evident and does not prove anything. The gonococci had no chance to grow. Geret made agar plates on glycerine agar and inoculated them with two lines of typhoid bacilli; between these two lines he made one of yeast. After 16 hours he found that both lines of typhoid bacilli grew very well, and were not influenced by the immediate neighborhood of the yeast. He concluded from this that yeast will not overgrow typhoid bacilli. But he forgot that the result of this experiment could not be different. Yeast will not grow well on an alkaline agar or on agar alone. Yeast grows best on "Bierwürze," or potato gelatine, or a slight acid sugar bouillon. I could mention 40 or 50 different variations of experiments similar to the two above mentioned, where authors have used mixtures of yeast with gonococci or staphylococci, or typhoid, or colon bacilli, in order to prove either that yeast deadens one or the other kind of bacteria, or that the bacteria deaden the yeast, or that the one did not disturb the symbiosis of the other, but in my opinion these experiments have no value whatever, nor do they help

us to explain the bactericidal and curative powers of the yeast. On the contrary, the different results obtained by the various authors show that from these experiments the real nature of the curative power of the yeast could not be obtained. Until we have found a soil favorable to yeast as well as to the bacteria with which we experiment, we cannot reach a positive conclusion. I have not been able to make yeast grow favorably on alkaline agar or bouillon; the favorable soil for yeast being "Bierwürze," or potato gelatine. But on these soils no one will be able to grow gonococci.

Experiments like these mentioned lack the first principle of bringing both kinds of bacteria under the same conditions. This shows that we must refer to the clinical experiences and the results thus obtained. However, this much can be said that yeast does not overcrowd the other bacteria in a mechanical manner, the vagina being anything but a good place for growing yeast; that the peptogenic enzymes have only a very slight degree of bactericidal power; that the amber and butter acid and glycerine existing during the process of fermentation can be neglected on account of the small amount; that the part of the nuclein acid is only a small one; that probably only the alcohol in the nascent condition and the CO_2 , which produces hyperemia and a local leucocytosis, may have bactericidal power; finally, the combination of all may work together. The only way to come to a conclusion would be this—to determine exactly the various kinds of bacteria in the discharge and their number, then to use yeast as described later, and then after a certain time investigate again, count the kinds of germs and their number again, a tedious work. "Dauerhefe" (deadened yeast) deadened in different ways, retains the power of fermentation and as clinical experience shows has also bactericidal power. Albert and Abraham made use of this preparation instead of living yeast, with the idea of avoiding the possible danger that the common yeast might be contaminated by pathogenic bacteria or be pathogenic itself. This danger has not been well founded. The yeast obtained from the breweries contains *saccharomyces cerevisiæ*, or *pastorianus*, and sometimes *saccharomyces ellipsoides*; and in some cases the yeast contains milk acid bacteria, which are not pathogenic and do not contain pathogenic bacteria; on the other hand, the bactericidal power, and the results obtained with "Dauerhefe" are less effective than those obtained by the common yeast. Many authors, and I myself, have never observed a case where yeast did any harm. I examined

three specimens of yeast which had come directly from the brewery, finding only one specimen containing tetragenese; the others contained no other bacteria. I did not investigate the pathogenic or non-pathogenic nature of this tetragenese. Furumculine cerevisine are similar preparations to Dauerhefe, they containing the zymase. Pathogenic forms of blastomycetes are the *saccharmyces albicans*, *hominis*, *farciminosus*, *lithogenes* and *neofarinans*, which are never found in beer yeast. The latter has been accused of producing cancer. On the other hand, most of the different forms of blastomycetes may be found in the vulva of normal women. It is certainly very essential to use fresh yeast, which can be easily detected by its odor, color and power to ferment. Following is a report of the cases and the manner in which I have used the yeast. I have treated 10 cases with yeast. From these 10 cases (a rather small number) I have come to the following conclusion: In some of my cases the result obtained was very good, the erosiones disappeared quickly, the character of the discharge changing from the purulent to a more whitish form, indicating a smaller amount of pus cells, the quantity of the discharge was lessened, both indicating a reduction of the inflammatory process. In some cases which seemed to have the same etiology and pathologic changes the results obtained were only improvements, while in other cases no result whatever could be seen. Landan says the smelling of the mucosa, the hyperemia and tenderness disappears sooner or later, and I can only confirm this statement. The wall of the vagina soon has a more normal appearance. In 4 cases of chronic vaginitis and endocervicitis of gonorrheic origin, in which gonococci were no longer present, I had good results with two of them, while other methods which had been applied before had given no result. The erosiones disappeared quickly, the discharge was much reduced, and the general health improved. One case showed improvement, while the fourth case, not differing from the others in any way, did not show any change for the better.

It is very hard to find an explanation for this: any other cause for the disease could be excluded with almost certainty. In two cases with the positive presence of gonococci, after from 9 to 15 days, the gonococci could no longer be found; the erosiones had disappeared in both cases; the discharge in one was so much reduced that the woman did not notice it any more, while in the other case only an improvement was obtained. The seventh case had an Bartholin's abscess, which was opened, and then the treat-

ment was discontinued after some improvement. The eighth case was a gonorrheic endometritis and double salpingitis, which did not show any improvement. The character of the discharge and the pathologic changes in the tubes pointed to the endometrium and not so much the cervix as the affected part. The different authors state that the endometritis is not, or only to a slight degree, improved with this treatment, while the endocervicitis, the most common affection, is in many instances improved. The *saccharomyces* or its products ferments. Alcohol may enter the cervix, the internal os apparently offering a barrier to therapeutic effects of the blastomycetes within the uterine cavity. Generally the vagina is not a very suitable place for the growing of blastomycetes. Two cases, 8 and 11 months, respectively, after artificial abortion showed improvement after from 14 to 22 days. The discharge was so much reduced that the women did not think they needed any further treatment. Chronic urethritis is not improved by this treatment and needs, therefore, special attention; also a Bartholinitis, or an affection in Skene's glands, cannot be reached or influenced by this treatment, beyond the fact that the healing of the vaginitis and cervicitis stops the acrid, irritating discharges, which may have caused reinfections. One case complained of itching for two days after applying the yeast; in two other instances the existing pruritus disappeared quickly. I observed no bad effects in all these cases; on the contrary, I can warmly recommend this simple, harmless and often effective treatment.

Method of Use.—The method is very simple. Every other day I secure fresh yeast from the brewery. After cleansing the vagina with sterile water, two teaspoonfuls of yeast and one teaspoonful of grape sugar solution or "Beirwürze" is introduced into the vagina through a speculum so that the portio and walls of the vagina are bathed with it. If this can be done at the patient's home it is preferable; if not after an elapse of a few minutes I use a tampon saturated with "Bierwürze" or grape sugar solution. This process should be repeated every 48 hours. After from 8 to 12 hours a vaginal douche should be used. Albert found *aspargin* a good soil for yeast and made *boli vaginales* and *bacilli* for the cervix from yeast and *aspargin* (Rheol). The results he obtained with this method were no better than those obtained by myself and others. On the contrary, Pien warns us against Albert's method. In several acute cases Pien used *globuli vaginales* and *bacilli* for the cervix made from yeast and *aspargin*,

which was followed by a salpingitis, for which he blames this method. But he goes too far. He is right as the use of rheol bacilli in the cervix is not advisable, especially not as he used it, in acute cases. On the other hand, what physician has not had the experience of women with a gonorrheic process, their genital organs having suddenly developed symptoms of a salpingitis or pelvioperitonitis, a day or so after their first visit to the physician. The examination alone or perhaps the treatment may have helped spread the process, or the process was perhaps just on the verge of spreading when the patient called on the medical man for the first time; the acute exacerbations are only natural in the course of this disease.

Affections in the vagina or on the cervix produced by *saccharomyces albicans* or *blastomycetes* have never been observed after using yeast; a simple vaginal douche removes all the yeast used. The cases most suitable for this treatment are those of acute and chronic gonorrhea of the vagina and cervix, as well as those with or without gonococci in the discharge. Also cases of purulent vaginitis and endocervicitis of other sources will derive more or less benefit, while cases of pronounced affection of the endometrium with a very watery discharge are not so easily influenced. I have had no experience regarding the use of this method as a preparatory treatment for vaginal operations.

VAGINAL ATRESIA COMPLICATING LABOR.

BY

JOHN COOKE HIRST, M.D.,

Assistant Instructor in Obstetrics, University of Pennsylvania.

VAGINAL atresia complicating labor is not a very uncommon condition. I have been able to collect some twenty-eight cases from the literature of the past five years. The case here reported presents several features out of the ordinary.

The patient, a colored woman aged 34 and a primipara, was sent to the Maternity Hospital of the University by Dr. Auburg and Dr. Haig, with the history that she had been in labor for over thirty-six hours, with no advance at all and that she had vaginal atresia. As Dr. B. C. Hirst was out of town, she fell under my charge. On examination it was found that the hymen was a thick, beefy membrane, with a very small opening at its extreme upper portion. It was necessary to cut the hymen before

any examination could be carried out. The vagina was a shallow cul de sac about one-half inch deep and apparently terminating against a wall of dense, fibrous tissue, in which a small circular opening allowed a slight quantity of blood to constantly escape. By rectal examination the fibrous wall could be felt extending almost to the cervix. It was not possible to pass a probe through the sinus up to the cervix. The external conjugate was $16\frac{1}{2}$ c.m., and the internal conjugate, as closely as I could estimate it by rectal examination, was $7\frac{1}{2}$ c.m. The patient gave a history of being some two weeks overdue, and one parietal eminence of the child projected well beyond the symphysis.

In view of the large child and the degree of pelvic contraction present, Cesarean section was decided upon and performed. When the uterus was opened a central placenta previa was found which had not previously been diagnosed. The Porro operation was done, and both mother and child made a good recovery, leaving the hospital four weeks later.

The mother's convalescence was marred by a mild attack of puerperal insanity, of the mental confusion type, and also by considerable dyspnea and irregularity of pulse, due to an aneurysm of the arch of the aorta. The bruit of the aneurysm was heard when the patient's heart was examined previous to administering ether, but as the examination was necessarily somewhat hurried, it was thought to be a murmur of aortic stenosis. The measurements of the baby's head averaged 1 c.m. above the normal.

In view of the maternal complications present, viz., vaginal atresia, contracted pelvis, placenta previa, aneurysm of the arch of the aorta, puerperal insanity and the overgrowth of the child, the case is, I think, worthy of record.

Vaginal atresia, or, more properly, stenosis, can be either congenital or acquired. The congenital type varies from transverse bands dividing the lumen of the canal to an apparent closure of the vagina by a band or wall of fibrous tissue of varying thickness, perforated by a small sinus which is usually tortuous, and opens into the vagina by a circular orifice. The commonest variety of congenital atresia or stenosis, excluding the isolated transverse bands, is one occupying about the middle one-third of the canal, with an apparently normal vagina both above and below it. The statement that in these cases the upper one-third of the vagina is obliterated is incorrect. The stenosis may be attended by no symptoms whatever during the patient's ordinary

life, or there may be a considerable degree of dysmenorrhea or even hematometra.

Acquired atresia may be due to improperly performed plastic operations, the injection of irritating liquids into the vagina (sulphuric acid in one reported case); it is also caused by the infectious exanthemata. Here the vagina may be almost entirely obliterated and replaced by a solid wall of cicatricial tissue traversed by a small, tortuous sinus of a caliber so minute as to baffle all attempts to find it.

The proper treatment of congenital vaginal stenosis or atresia is now pretty definitely settled. A Cesarean section is never necessary for *uncomplicated* vaginal stenosis. All of these cases can be managed by manual dilatation, instrumental dilatation hydrostatic dilatation, or at the worst, deep lateral incisions of the cicatricial portion of the canal, followed by the extraction of the child with forceps or by version. After the delivery the vagina must be repeatedly dilated, until the injuries or incisions have healed, in order to prevent the recurrence of the stenosis in a more serious form. Some of these cases will spontaneously dilate as the head descends and obviate the need of any operative interference.

In the presence of complications, as in the present case, Cesarean section may be necessary. If the operation is performed, the only one to be considered is the Porro operation, or hysterectomy. According to the series of cases reported by Brindeau,⁸ the Säger operation has in these cases of atresia double the mortality of the Porro. In acquired atresia, Cesarean section is almost the only possible method of treatment. The cicatricial tissue is too dense and firm to admit of dilatation; even incisions will not give the space necessary for delivery, to say nothing of the dangers of hemorrhage. In cases of acquired atresia, unless the atresia is of the type of the congenital stenosis and involves only a part instead of the whole canal, the Porro Cesarean section will give by far the best results.

REFERENCES.

1. Coester: Triang. Disset. Magdeburg, 1900.
2. Schenck: Centralblatt für Gyn., No. 6, 1900.
3. Brindeau: L'Obstétrique, March, 1901.
4. Andebert and Payran. Gaz. hebdom. de Méd. et de Chir., July 27, 1902.
5. Bué: L'Obstet., No. 3, 1902.
6. Giglio.
7. Jacklin: Wiener Med. Wochenschr., No. 48, p. 2269, 1902.

8. Kermanner: Monatschr. f. Geb. und Gyn., Bd. XVI, Heft 5, 1902.

9. Levêque: Annales de Gyn. et d'obst., January and February, 1902.

10. Michaeloff: Sitzgs. Berichte d. Aertztgesulsch zu. Rostow am Don., 1900-1901.

11. Schenck: Monatschr. f. Geb. und Gyn., Bd. XVI, p. 964.

12. Sobstianski: Monatschr. f. Geb. und Gyn., Bd. XV, p. 343.

13. Lambinon: Journal d'Accouche. de Liège, August 31, 1902.

14. Stroeder: Triang. Disset., Merburg, 1902.

15. Batzevitch: Annales de Gyn. et d'Obstet., December, 1904, p. 750.

16. Violet: Annales de Gyn. et d'Obstet., December, 1904, p. 742.

182 SPRUCE STREET.

SECONDARY METASTATIC IMPLANTATION OF CARCINOMA IN THE VAGINA.

BY

EDWARD A. SCHUMANN, M.D.,

Out Patient Surgeon Gyneccean Hospital, Philadelphia, Pa.

(With Three Illustrations.)

METASTASIS of pelvic carcinoma to the vagina is an occurrence of great rarity, owing to the fact that not only do the usual carriers of metastatic growth, the blood and lymph spaces, run in the reverse direction, that is, from the vagina to the pelvis, but the mucous membrane covering the vagina is of such a dense and resisting character that direct implantation of carcinomatous cells from higher up in the genital tract is rendered extremely improbable.

The case here reported is undoubtedly one of true metastatic implantation of an adenocarcinoma of the fundus uteri, to the vagina.

The patient, Mrs. R., was admitted to Dr. Beyea's service in the Gyneccean Hospital on Dec. 12, 1903. Patient was a nulliparous widow of 45. Her family history was significant in that her father died of intestinal carcinoma. Patient had been a fairly strong, healthy woman until eight months before admission, when she began to notice some menorrhagia, accompanied by severe cramp-like pain during and after the flow. Her previous menstrual history was that puberty occurred at 14, menses always regular and unaccompanied by pain, the flow lasting four days.

There had never been any irregularity in period nor any metror-

rhagia. The menstrual disturbance was accompanied by considerable backache, shooting pains throughout the abdomen, increasing nervous disorder, and a slow, though progressive loss of weight. Physical examination revealed a moderately well nourished woman with slight sallowness of skin. A high degree of nervous excitability was present. The heart and lungs were normal in all respects.

Upon pelvic examination the vaginal outlet was nulliparous, the vagina presented a nodule the size of a large pea, smooth in surface and somewhat irregular in outline. The nodule was situated in the right posterior aspect of the vagina, about 3 cm. from the cervix uteri.

The cervix was nulliparous and hypertrophied. The uterus was very much enlarged, slightly irregular in shape, somewhat bound down, and presented a small hard nodule on its anterior surface. A diagnosis of carcinoma of the fundus was made and the patient prepared for operation.

Under ether anesthesia, celiotomy was performed by Dr. Beyea, a complete hysterectomy being done by the abdominal route. The patient reacted well, and after a somewhat stormy convalescence was discharged in one month. She completely recovered from the effects of her operation; returned to the hospital, and, under ether anesthesia, the vaginal nodule was excised, the wound being closed with silkworm gut sutures. These were removed in the usual time and the patient returned to her home. About two months later she returned with another small nodule in the vaginal scar. This was thought to be purely inflammatory in type, and the patient was referred to the x-ray department of the hospital. After several treatments the nodule disappeared and has not since returned.

The patient is now (13 months after operation) in excellent health, steadily gaining weight and able to maintain herself.

The specimens removed at operation consisted of the uterus and a nodule excised from the vagina. The uterus was symmetrically enlarged to the size of a 2½ months' pregnancy, measuring 12 cm. in length, 7½ cm. in its greatest transverse diameter and 5 cm. at the internal os. The peritoneal surface was smooth and glistening, free from adhesions. On the anterior uterine wall there was noted a small, hard, pea-sized myoma. In consistency the organ was somewhat softer than normal. The growth had not extended into the broad ligaments which preserved their usual relations. On section of the uterus it was found to be the seat of an extensive

infiltration of malignant tissue. The myometrium was hypertrophied, measuring from $2\frac{1}{2}$ to $3\frac{1}{2}$ cm. in thickness. The uterine cavity was distended and filled with yellowish necrotic tissue which evidently had almost entirely replaced the endometrium and had extensively invaded the muscular walls. The new growth was of pinkish to yellowish color, in certain areas rather firm in consistency, but showing extensive areas of necrosis. The surface was

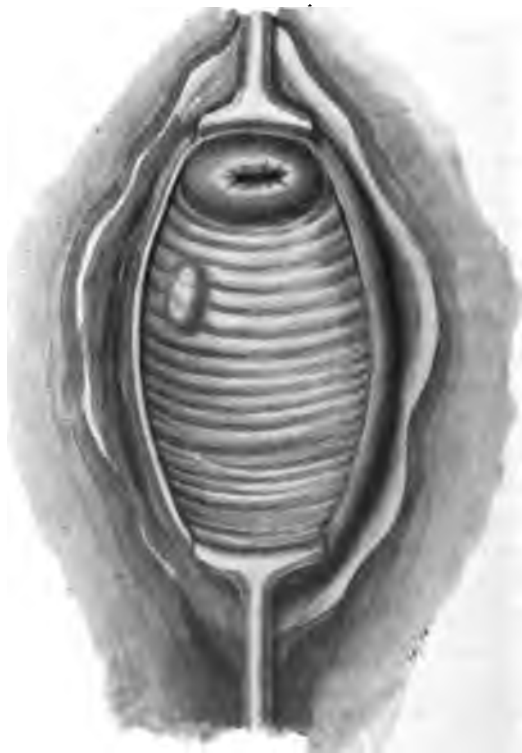


Fig 1. Adenocarcinoma of the Posterior Vaginal Wall Secondary to Adenocarcinoma of the Fundus Uteri.

shaggy and irregular; in no case could any corporeal endometrium at all resembling the normal be discovered. There was no evidence of a capsule. The growth involved the entire uterine corpus extending down through the internal os and invaded the cervix to within 1 cm. of the external os. Below this the cervix was, to macroscopic examination, absolutely normal.

The nodule removed from the vagina had occupied a position

in the right posterior vaginal surface about 3 cm. below the external os. It was situated below the mucous membrane, even movable under it. There was no evidence of ulceration or breaking down. The vagina showed no evidence of erosion or irritation of any kind. The nodule was of moderately hard consistency, measured 15 mm. by 10 mm., was flattened antero posteriorly, of a pinkish yellowish color, and possessed of a fairly good blood supply. It was not encapsulated.

Microscopically the growth in the uterus was found to be a typical adenocarcinoma developing in the utricular glands, and subsequently invading the myometrium and the upper segment of the cervix. The squamous epithelium of the vaginal portion of cervix was normal, as was the glandular epithelium about the external os and extending up the cervical canal 1 cm. At this point (1 cm. above external os) the evidences of malignant change were seen. The glands were lined with several layers of cylindrical epithelium and in many cases packed with typical carcinoma cells having irregular, rather poorly staining nuclei. The glands had become enormously increased in number, and in many instances were intricately convoluted. The lining epithelium was in a few areas limited to a single layer, but generally there were several layers of unchanged cylindrical epithelium.

The stroma was abundant, and showed a moderate degree of round cell infiltration. As the internal os was approached, the glands became more numerous, the stroma relatively more attenuated, and areas of necrosis showed in the center of some of the cell masses. This condition advanced progressively as the fundus was reached. The fundus was the seat of a typical adenocarcinoma. The glands were enormously increased in number, in many areas only a faint network of stroma interposing between them. In other areas the stroma was rather large in amount. The glands were in general markedly convoluted, in some places so much so that secondary glands had been formed. The glandular arrangement was well preserved, but in several areas the limiting membrane had been penetrated, allowing the epithelial cells to invade the surrounding stroma. The glands were lined with two or three layers of epithelium; occasionally one was seen densely packed with epithelial cells. The uterine muscle had been deeply penetrated by the growth. Glands and closely packed nests of epithelial cells resembling squamous carcinoma were seen, lying between and around the muscle bundles. There was no alteration in the vascular supply to the uterus, the blood vessels remaining appar-

ently free from the growth. There were many areas where necrosis of the glandular tissue had taken place, resulting in masses of more or less caseous tissue. In other cases there were multiple clear spaces in the stroma, the glands having retracted. Examination of the vaginal nodule showed a large amount of dense spindle-celled stroma showing marked round cell infiltration, in which lay many atypical glands composed of the proliferated carcinomatous cells. The glands were in no case histologically perfect, consisting of cylindrical or cuboidal epithelium arranged in a circular manner and in most cases filled with epithelial cells. The attempt on the part of the epithelial element to proliferate in its original morphology and to form glands was very evident. In one or two areas, indeed, typical glands lined with a single layer of cuboidal

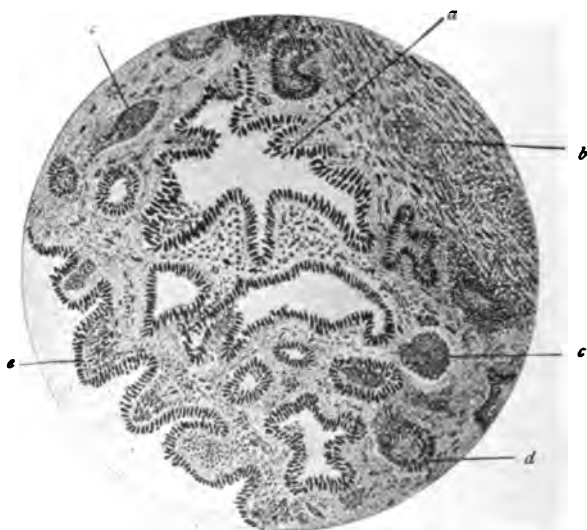


Fig. 2. Section Through an Adenocarcinoma of the Body of the Uterus.

- (a) Enormously hypertrophied and convoluted gland with beginning proliferation of the lining epithelium.
- (b) Malignant cells invading the myometrium.
- (c) Mass of epithelial cells with the restraining gland wall entirely gone.
- (d) Epithelial cells penetrating the wall of a gland.
- (e) Development of [epithelial cell masses in the very superficial layer of the endometrium.

epithelium had been produced. There were no areas of necrosis noted.

The diagnosis of the metastatic implantation and not a direct extension in this case was based upon the two facts, first that the cervix for a distance of 1 cm. above the external os was perfectly normal, showing after careful examination no evidence of carcinoma, and second that the vaginal mucosa was everywhere intact

showing no erosions or areas of local hyperemia, and that the metastatic nodule was entirely beneath the mucous membrane, which was freely movable over it.

In a very careful search of the literature upon this subject, but three analogous cases have been traced. They are as follows:

CASE I.—Fisher¹ reports the case of a 55-year-old woman with severe post-climacteric hemorrhages, rapid emaciation, and cachexia. Examination revealed two flat tumors situated on the anterior vaginal wall, just below the urethra. They were about 1.5 cm. in diameter and were separated by normal mucous mem-

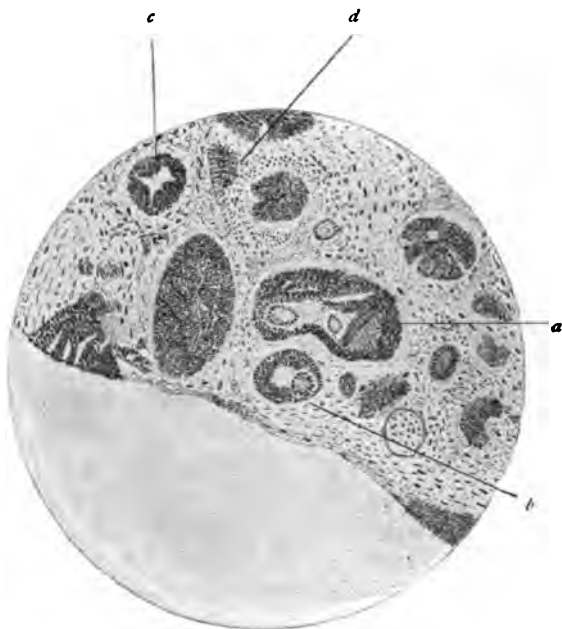


Fig. 3. Section Through Vaginal Nodule, Showing Metastatic Adenocarcinoma.

- (a) Atypical gland formed by the proliferating carcinoma cells.
 - (b) Gland almost histologically perfect, lined with a single layer of low cuboidal epithelium.
 - (c) Beginning arrangement of epithelial cells into layers.
 - (d) Carcinoma cells free in stroma.
- Note the decided tendency to form glands, in tissue where normally no glands exist.

brane. Another papillary tumor, 3 cm. in diameter, occupied the posterior vaginal wall, invading the rectovaginal septum. These tumors bled easily. The uterus was considerably enlarged, and the cavity contained masses of new growth bleeding freely upon touch. The vaginal tumors were excised and the uterus curetted.

Microscopic examination revealed a typical primary adenoca-

cinoma of the fundus uteri, with metastatic growth in the vagina, the latter consisting almost entirely of epithelial elements which arranged themselves in a glandular form. There was very slight evidence of stroma. The entire picture being composed of the atypical glands. The cervix showed no malignant change. The patient died of exhaustion after two months. Fischer, in commenting upon the production of the metastasis in his case, doubts the possibility of the retrograde metastasis, and explains the etiology by a contact infection, the malignant elements having been forced out of the uterus during uterine contractions and finding lodgment upon the posterior vaginal wall, where resistance had been lowered, and the surface excoriated by continuous bathing with the irritating uterine discharge.

CASE II.—Kelly.² J. S., age 46, complains of pain in lower right abdomen, vaginal discharge. Family history very positive for tuberculosis. One brother died of a tumor of the bowels.

Past history not relevant, save that after a previously normal menstrual life the flow for the past three or four years has been abundant and clotted, with a marked leucorrheal discharge, at times offensive, irritating and blood stained. Patient has had prolapse for sixteen years, but during the past twelve the uterus has been well supported by a pessary.

General condition, an emaciated and constipated, but not anemic woman.

Vaginal examination showed a much relaxed outlet. On the posterior vaginal wall, 3 cm. from the cervix, was a fungating mass, which seemed to be perfectly circumscribed. The cervix was normal and the uterus of the usual size and in good position, freely movable. The appendages were normal and by rectal examination no induration of the bowel could be detected. The growth in the vaginal wall was excised, and the patient discharged in a month.

On histological examination the nodule was found to consist almost entirely of epithelial elements. These showed an ill-defined grandular arrangement, but in many areas typical glands were visible. These were lined by one layer of cuboidal epithelium. The stroma was extremely scant and consisted of spindle cells with much small round cell infiltration. The growth was an adenocarcinoma. The patient was readmitted ten months later, complaining of much abdominal pain, and showing marked cachexia.

Exploratory celiotomy revealed an inoperable adenocarcinoma of the fundus. Histological examination of scrapings of endo-

metrium showed a somewhat peculiar but undoubted adenocarcinoma. In this case the vaginal nodule was undoubtedly metastatic, the primary fundal neoplasm causing no symptoms save possibly the discharge, and occasioning no physical signs of disease.

CASE III.—Beyea⁸ describes a case which, while not absolutely analogous, depends upon the same mechanism of retrograde metastasis along the pelvic lymph channels.

F., 52 years; tumor in right ovarian region; rapid growth filling pelvis and extending two inches above umbilicus. Celiotomy, with removal of two large papillary cyst adenomata. Gauze drain. Recovery. Diagnosis: Papillary cyst adenoma of ovary, with beginning adenocarcinomatous degeneration. Upon first examination there was found in the rectovaginal septum, one inch below the vaginal vault, a nodule the size and shape of an enlarged lymph gland, hard in consistency, freely movable beneath the vaginal mucous membrane, and not connected with the abdominal growth. Some months later this metastatic growth was removed. It was now the size of a hen's egg; microscopic examination showed true metastasis of primary papillary cyst adenoma, with extensive adenocarcinomatous degeneration. The metastasis was an encapsulated papillary cystic tumor developing in the connective tissues between the rectum and vagina. The vaginal and rectal walls were normal, not infiltrated, but only adherent to tumor wall. Metastasis took place as described by Pfannenstiel—cells of the primary growth were taken up by peritoneal stomata and carried to a lymph channel in the rectovaginal septum, where proliferation of such cells caused the formation of a growth identical in character.

To explain the mechanism of metastasis from the pelvic organs to the vagina is a matter of some difficulty and uncertainty. Usually metastasis takes place by means of the blood and lymph currents, the secondary growth appearing in those regions where the flow of blood or lymph is checked or delayed, the cells of the malignant growth having time to deposit themselves in the tissues immediately surrounding the area of stasis. Metastasis may also occur by direct implantation, the cells passing over the tissues until they reach an area of low resistance, or where there has been some destruction of the surface epithelium. Here they remain and form a metastatic nodule.

In this case, however, the normal direction of the lymph and blood currents is from the vagina toward the uterus. It would

therefore be necessary for the cells to proceed in the opposite direction against the lymph current—the retrograde lymph current of Von Recklinghausen.

The lymph channels become obstructed by the proliferation of the carcinomatous cells, and the current is forced in a reverse direction, a retrograde lymph current being established.

The same principle applies to the veins and venous sinuses.

Fischer, as has been said, in explaining the etiology in his case, opposes the theory of retrograde metastasis, and concludes that a direct implantation of living carcinomatous cells upon an eroded portion of the vaginal surface was the origination of the vaginal nodule.

In the case here reported, the fact that the nodule was entirely beneath the mucosa, which itself was in no way changed from the normal, and was movable over the nodule, would preclude such a process. The theory of the backward flow of the cell carrying lymph current must therefore be adopted.

It will be seen by Fig. 3 that the vaginal nodule is entirely composed of atypical glandular tissue. This, occurring in tissue normally entirely devoid of glands, as the vagina, can be explained by the fact that, when metastasis of carcinoma occurs, the transplanted cells reproduce themselves and develop a secondary growth, in every way analagous to their primary growth, the involved tissue having no part in the histological construction, but furnishing only the connective tissue and vascular supply. (Ziegler.*)

It follows, then, that given a portion of an excised vaginal tumor, which shows evidence of glandular arrangement, we may predicate the presence of a primary growth in some gland bearing organ. Kelly's case (II) shows this very clearly. At the time of discovery and removal of the vaginal nodule there was absolutely no evidence of the involvement of any other organ, yet in less than a year the patient returned with an inoperable adenocarcinoma of the fundus.

The diagnosis of carcinomatous metastasis to the vagina rests entirely upon the microscopic examination of the vaginal growth. Should this show glandular formation, the picture being that of adenocarcinoma, the growth must be secondary in origin. There being normally no glands in the vagina, with the exception of those rare cysts sometimes found, primary carcinoma here is compelled to follow the histological formation of its seat, and must of necessity be squamous in type.

Glandular carcinoma, therefore, in a tissue without glands, must necessarily be secondary—either by direct extension or by metastasis.

The treatment is, of course, radical excision of the vaginal growth, with careful search for the primary seat. In default of physical signs of uterine involvement, a diagnostic curettement should always be performed at the time of the removal of the vaginal growth, to determine the possible early invasion of the endometrium by carcinoma.

The advantage of this procedure is again illustrated by Kelly's case, in which it is possible that a beginning adenocarcinoma of the fundus uteri might have been diagnosticated by curettement at the time of the vaginal operation.

BIBLIOGRAPHY.

1. Fischer: *Zeitsch. für Geb. und Gyn.*, 1891, Vol. XXI., p. 185.
2. Kelly, quoted by Cullen: *Cancer of the Uterus*, p. 417.
3. Beyea: *AMER. JOUR. OBSTET.*, 1900, Vol. XLII, p. 372.
4. Van Recklinghausen: *Virch. Archiv.*, 1885, Vol. C, p. 503.
5. Ziegler: *General Pathology*, p. 368.

15 PELHAM ROAD, GERMANTOWN, PHILA.

HEMATOMA OF THE OVARY.

BY

MAGNUS A. TATE, M.D.,
Cincinnati, Ohio.

THE field for the study of hematoma of the ovary is somewhat restricted, as case reports are rare, its causation and pathology have not been thoroughly studied, and our knowledge of the whole subject is limited.

Broadly speaking, the cause of ovarian hematoma is an interference with the circulatory mechanism of the ovaries. A study of the cases which I have collected shows that three periods of life markedly predominate as a predisposing factor. Hematoma of the ovary is most common (1) before or during birth; (2) at or near the first menstrual flow; (3) in early adult life or the child-bearing period. Under the first division Riedel (1) stated:

at a meeting of the Obstetrical Society at Berlin, in 1857, that B. Schultze reported a case of hematoma or hemorrhage into the ovary of a new-born child. Riedel in 1894 also reported a case similar to Schultze's, where the child was still-born and hemorrhage in the left ovary had occurred.

Montgomery² says that when the hemorrhage is small, it is known as ovarian apoplexy, and when large or frequently repeated, so that the ovarian stroma is practically destroyed, and a blood cyst is formed, it is called a hematoma. Pure ovarian apoplexies occur primarily as a result of venous stasis, inflammation, or general diseases in which there is a tendency to hemorrhage, such as scurvy, typhoid or puerperal fever. Riedel in his inaugural dissertation classifies hematoma of the ovary as follows: (1) Hemorrhage of the Graafian follicle (vesicular); (2) multiple vesicular hemorrhage; (3) extra-vesicular; (4) intra-vesicular.

The first variety we understand to be a small hemorrhage occurring in different follicles. These hemorrhages are not so extensive as to lead to rupture of a follicle, and cannot very well lead to a large hematoma of the ovary. This variety occurs in infectious diseases, burns, and poisoning. Winckel saw follicular hemorrhage three times after petroleum burns, twice in phosphorus poisoning, three times in typhoid, once each in cerebral hemorrhage, tuberculosis and heart failure. The hemorrhagic follicles, however, were not so numerous in these as after petroleum burns. The third variety of follicular hemorrhage, the extra-vesicular, includes anomalies of ovulation, extravasation before or after the eruption of the follicles. This extravasation takes place either into the stroma, or produces an internal hemorrhage which is frequently followed by peritonitis, and this in time may terminate fatally or in an hematocele. To illustrate these points I cite the following cases: Patient³, age 31, married, gave birth to a seven months' fetus nine years ago. Vaginal examination—lacerated cervix, uterus anteфлекed, right ovary and tube normal, left tube and ovary decidedly enlarged and so tender that a careful bimanual examination was impossible without an anesthetic. The patient was seized with a violent pain in the left ovarian region, and quickly lost consciousness. This pain subsequently spread over the whole of the abdomen. There being no improvement in three days, Dr. Boldt operated. On section, blood serum gushed out, and in the left ovary was found a rent six millimeters in length, from spontaneous rupture. The right ovary

was normal. This case is one where the peritonitis was due to the rupture of an ovarian hematoma.

A case is also reported where hematoma ruptured and caused hematocele. Mrs. S.,⁴ age 35, vi para, had a sudden attack of pain in the left iliac region, followed by syncope and several gushes of clear watery discharge. The following day uterine hemorrhage began and continued without intermission. Prior to onset patient had not menstruated for several weeks. On vaginal examination the uterus was found to be pushed forward, with a large, doughy mass, filling the pelvis. On abdominal section the pelvis was found filled with dark blood, tubes normal, left ovary enlarged to the size of a plum, due to ruptured hematoma.

In the fourth variety, the intra-vesicular, the blood extravasation takes place into the follicle, and is held within the ovary. It cannot burst, but it may increase by repeatedly recurring hemorrhages and form a large blood cyst.

Rollin described the hemorrhage which occurs in the second and third varieties (multiple-vesicular and extra-vesicular hemorrhages), as hemorrhagic blood cysts, because they grow larger with each menstrual period.

Olshausen says that no age precludes the formation of ovarian cysts of one or the other variety, but that we have no positive observations of them in fetal life. The latter part of this statement however, is not correct, as Winckel saw a case where, at an autopsy of an infant dying four days after birth, cysts were found which had thin, transparent walls, were unilocular and contained clear serum. Doran found at an autopsy two large ovarian tumors in a seven months' fetus, which died a few minutes after birth. Gessner also describes a cyst of the right ovary in a new born infant.

Hemorrhage into cysts frequently occurs as the result of twisting of their pedicles. The following cases, taken from the *Pacific Medical Journal*⁵ illustrate this point. Case I. Patient, age 24, had colicky pains in right ovarian region, followed by an immense swelling and shock. Abdominal section, ten days after the first symptoms, showed an unruptured unilocular cyst with a twisted pedicle and enormously distended with blood. Death from sepsis. Case II. Patient, age 40, no children, married late in life, was taken with symptoms of general peritonitis. Section showed a large extravasation of blood into an ovary with a twisted pedicle. Death from sepsis. There might be an inclination to look upon the cause of hemorrhage as prolonged labor. The following case came under my care.

Mrs. Annie F., age 27, menstruated at the age of 14, and up to the time of marriage was healthy. Has had three living children, and a fourth delivery when she gave birth to twins at the eighth month. The first three labors were normal in all respects. The fourth began on Sunday, and pains were followed almost immediately by rupture of the amniotic sac. She was not delivered until the following Friday. The patient claims that during all this time she suffered excruciating pain, and was so exhausted that on several occasions she fainted, but the physician let nature take its course. From the date of the birth of these premature children, which were born dead, she dates her illness. Since then the menstrual flow has been almost constant for five years, a flow of one week, a cessation of from one to three days and then a return of the flow. At no time has she been free from pain of a bearing down character. *Examination.*—Physical condition not good, very anemic, heart action rapid and running up to 120 on the least excitement. On vaginal examination, which was very painful, I found a mass the size of an egg on the left side, and on the right one the size of an orange. On section a cystic ovary and hydrosalpinx were found on the right side and removed, and on the left was a hematoma. The greater part of the left ovary with the hematoma was resected. Patient made a very easy recovery. Examination and history three months afterward: no pain, sleeps well, has a good appetite and, with the exception of a slight tenderness on the right side, seems to be absolutely well.

Olshausen claims that varicosity of the ovarian vessels is the cause of the blood extravasation.

At the menstrual period the expulsion of an ovum by rupture of a Graafian follicle is always followed by a hemorrhage. This occurrence is purely physiological, but it can lead to a pathological condition if the hemorrhage becomes greater or continuous, especially if there is an association of contraction of the tunica albuginea, whereby the rent is closed. The hemorrhage then takes place inside the follicle, which increases in size, and as it enlarges the cyst wall naturally becomes thinner. Blood cysts of this nature vary in size from a hazel nut to that of a hen's egg.

Delafield and Prudden^o concisely state that, aside from the normal hyperemia of the ovaries during menstruation, the vessels may be congested in inflammation, in displacements with interference with the venous circulation, in certain diseases of the heart, etc., and this congestion may then be followed by a chronic inflammation. Normally the amount of blood effused into the follicle

at the menstrual flow is small, it becomes solid, is decolorized and then gradually absorbed. Sometimes this effusion is much greater and the follicle filled with blood is as large as a pigeon's egg. The blood may then remain in the follicle and still be absorbed and replaced by a serous fluid, or it may rupture and escape into the peritoneal cavity. Death may ensue from hemorrhage or the blood may collect in Douglas' cul-de-sac and be enclosed in false membranes. Hemorrhage also occurs into follicles which have become cystic. Interstitial hemorrhage into the ovary sometimes occurs without a known cause.

It is not unusual to find the report of a case where the symptoms of menstruation are present without the evidence of a menstrual flow externally. In such a condition the ovary may be the seat of an inflammatory condition or hemorrhage. The history of a vicarious menstruation associated with hematoma of the ovary is reported by Garrigues.⁷ He presented a specimen of imperforate uterus with a large hematoma of the ovary. Girl, 20 years of age, had never menstruated. Vaginal examination, normal vulva and vagina, but above the vagina a large round mass was felt. On section, right ovary slightly enlarged showed a fresh corpus luteum. The left tube was normal, but bound to a cyst which nearly filled the pelvis. This cyst proved to be a hematoma of the left ovary containing ten ounces of chocolate-colored fluid. This hematoma was an evidence of vicarious menstruation internally, which, according to the history, had been going on for four years. This patient suffered from epileptic seizures, coming on only at the time of the menstrual period.

Pryor⁸ says that it is known that a hematoma may form rapidly, and that hemorrhage may occur so suddenly as to cause so rapid a destruction of the ovary, with severe pain located on one side, as to simulate an ectopic pregnancy. This pain may be of a dull aching character and constant. Such is the history of a case reported by H. J. Boldt⁹ in which he made a vaginal section to remove a large ovary for the symptom of constant pain. The enlarged ovary proved to be a hematoma. Smaller accumulations of blood in the ovary and cystic degeneration produce localized pain, which is increased a few days before menstruation; that is, at the time of ovulation.

Roger Williams¹⁰ says that mechanical disturbances in the circulation in fibroids nearly always produces congestion in the vicinity, and that the ovaries are almost always diseased. They are congested and enlarged owing to hyperplasia of the stroma with

overgrowth of the follicles, the former lesion predominating. Their blood-vessels are thickened and small cysts are frequent; yet it is a curious, and to me a rather inexplicable phenomenon that in the majority of fibroids and ovarian cysts, where for some time there is a constant increase in the blood supply to the entire pelvic region, and where in many cases the blood vessels are enormously increased in size, we find on section one of the ovaries normal, or nearly so, at least not damaged enough to require extreme surgical interference.

The contents of the blood cysts differ according to the length of time that they have formed. In the beginning the contents of the cyst is fluid blood, this in time becomes clotted, the fibrin is deposited and the fluid serum is absorbed. The hematin is decolorized, the fibrin is entangled with the blood corpuscles, and then it becomes a rust colored or chocolate-brown mass. This mass in consistency is not unlike that of jelly and resembles softened splenic tissue. Bender,¹¹ in his study of the blood, gives the findings in twenty-three cases of various kinds of ovarian cysts, and proclaims that it is possible to determine the benign or malignant character of the cyst by examination of the blood contents. He says that the neoplasia is certainly non-malignant if the whites do not number more than 6,000 to 8,000, and when the proportion of reds is normal, the presumption is against malignancy, even in cases of considerable leucocytosis. Bender states rather positively that only when the reds are below normal and the whites materially increased are we justified in assuming malignant cancer degeneration.

Among some of the rarer predisposing causes or associations of hematoma of the ovary may be mentioned diseased conditions of the blood such as purpura, mental conditions bordering upon idiocy, and dysmenorrhea.

J. C. Janvrin¹² exhibited a specimen where a fibrinous clot was imbedded within the center of the left ovary, the remnants of an old hematocele. The case was one of dysmenorrhea, pain in both ovaries and tubes, and endometritis. Catarrhal salpingitis of both tubes, and abscess of the right ovary, and an old hematoma of the left ovary were found by section.

A very interesting case reported by S. P. Kramer¹³ is as follows: Patient married six months ago, never pregnant. Since eight years of age she had had attacks of purpura at various times, and epileptic attacks, and mentally was a degenerate. Her father had syphilis. Menstruation began at 13, was profuse, of

two weeks' duration. Examination: left ovary enlarged, tender and fixed. On section, double oophorectomy; left ovary a hematoma the size of a goose egg, weighed 54 grammes. The operation was without effect on the epilepsy or the purpura.

Another case associated with hysterocpilepsy is reported by G. M. Edebohls.¹⁴ Hematoma of the ovary diagnosed by exploratory puncture. Patient, aged 24, married at 19, gave birth to a seven months' child shortly thereafter, not pregnant since. This patient had hysterocpilepsy ever since menstrual period began. The attacks were most severe at the menstrual periods. Pain in left groin constant. Examination, uterus slightly anteflexed, tubes normal; right ovary normal but bound down by adhesions; left ovary enlarged, tender and formed a tumor the size of a large hen's egg, freely movable but tender. An exploratory puncture yielded eight grammes of blood serum. Slight diminution in size and tenderness of tumor thereafter. Diagnosis, hematoma of left ovary, adhesions to right ovary. This diagnosis was questioned by many of his audience. The coexistence of the hematoma and hysterocpilepsy in his opinion demanded an operation. Patient reported somewhat improved after the section.

Among active causes may be mentioned trauma and electricity. W. Gill Wylie¹⁵ reports a case of hematoma of the ovary in which the bleeding was evidently brought about by the use of electricity, in trying to cure a fibroid tumor of the uterus.

Hematoma of the ovary is nearly always associated with other pelvic lesions as of the uterus, tubes, ovaries and appendix. Lawson Tait has made the statement that ovarian lesions cause uterine myomata, but on the other hand, no less an authority than W. R. Williams says that they are the consequence rather than the cause of uterine disease. The following cases illustrate the association of pelvic lesions with hematoma. Case of hematoma of right ovary, abscess of left ovary with pyosalpinx is reported by R. H. Murray.¹⁶ Patient, aged 27, married three years, had had two children. Patient's last confinement the third of February, 1888, uncomplicated. On April 19th, fifteen weeks later, she had nausea and fainting, thought she was pregnant although she was nursing the child, but her physician assured her to the contrary. Examination, November 12, 1888, uterus fixed, enlarged and tender, profuse leucorrhoeal discharge. To the right of uterus an immovable tumor the size of a mandarin orange, not fluctuating but tender, tube distended; left tube and ovary enlarged and fixed. Probable diagnosis, ectopic gestation or pyosalpinx. Dr. Reamy

had a case where the ovary was enlarged and tender. On section, hematomata of both ovaries found. One ovary and tube removed; the hematoma of the other ovary was dissected out, leaving a portion of ovarian tissue. Subsequently the patient married and had two healthy children.

Dr. Edwin Ricketts¹⁷ read a paper before the Brooklyn Gynecological Society on the subject of Hematoma of the Ovary, and stated that he had encountered fourteen cases, six of which he reports. The chief symptom in each was pelvic pain, usually of a number of years' duration.

Dr. W. Wenning of Cincinnati gives me the history of the following case: Patient, aged 40, had one child 22 years ago. Had pelvic pain for years. Examination, enlargement and great tenderness of both ovaries. Both ovaries removed; recovery. Dr. Howard Kelly¹⁸ reports a case of hematoma of the right ovary with adherent Fallopian tubes.

Dr. N. Stone Scott claims that part of the hematomata are due to an ovarian impregnation with early death of the fetus.

Conclusion.—In studying this variety of cases collected, we can at least present a few facts of some value. Klob states that the follicular variety is by far the most common. Scott says, that in operating for ovarian disease hematoma is frequently found. In this I concur, and do not believe that hematoma is so rare as the paucity of case reports in literature would lead us to believe. Hemorrhage may collect in small patches, or be so diffuse as to destroy the parenchyma or even the ovary itself. In size, hematomata vary from that of a hazel nut to that of a good sized orange. In no case reported was a diagnosis positively made before section, except the one reported by Edebohls, and this diagnosis was questioned by every one who took part in the discussion. The cases uncomplicated were free from fever, but pain was almost a constant symptom. Upon vaginal examination, tenderness was almost constant, sometimes the ovary was fixed and pain was frequently severe.

To summarize the case reports quoted: Schultze and Riedel reported hematomata in new born infants. Winckel saw hematoma of the follicular variety following petroleum burns, phosphorus poisoning, typhoid fever, cerebral hemorrhage, tuberculosis and heart failure. Edgar reported a case where the hematoma ruptured and caused a pelvic hematocele, and Boldt one where the hematoma ruptured and peritonitis resulted. Two cases of hematoma were reported in which the hematomas became cystic and had

twisted pedicles. Garrigues gives the history of a case associated with vicarious menstruation; Janvrin of one of dysmenorrhea with salpingitis of both tubes, abscess of right ovary and hematoma of left ovary; and Murray of a case of abscess of left ovary and hematoma of right. Kramer reports a case associated with purpura and epilepsy, and Edebohls one where hysterolepilepsy complicated. Wylie had a case where electricity was the probable cause; Tate, a case following a long, tedious labor; Reamy, one where one ovary and a portion of the other were removed, and the patient subsequently had two children. Ricketts reports one associated with a large ovarian tumor, one with a dermoid, one with a suppurating appendix, one where the left hematoma was removed, the right being normal, and in one year later the right ovary had to be removed for hematoma. Wenning operated upon a case of double hematoma, the patient suffering from excruciating pain when an examination was made.

The age of child-bearing women who are afflicted with hematomata of the ovaries varies from 15 to 40 years, and the left ovary seems to be oftener affected than the right.

REFERENCES.

1. Riedel: Inaugural Dissertation, Halle, 1896.
 2. Montgomery: Text Book of Gynecology.
 3. Boldt: *Annals of Gyn.*, vol. 4, p. 6 (1890-1).
 4. Edgar: *Glasgow Medical Journal*, Jan. 24, 1900, p. 294.
 5. *Pacific Med. and Surg. Journal* and *Western Lancet*, Aug., 1888, p. 449.
 6. Delafield and Prudden: Text Book of Pathology.
 7. Garrigues: N. Y. Acad. of Medicine, Section of Obst. and Gyn., Dec. 28, 1889.
 8. Pryor: Text Book of Gynecology, p. 64.
 9. Boldt: *AMER. JOUR. OF OBSTETRICS*, 1902, p. 532.
 10. Williams: Text Book on Uterine Tumors.
 11. Bender: *Revue de Gynécologie*, Paris, 1903, p. 398.
 12. Janovin: *N. Y. Jour. of Gyn. and Obst.*, vol. 2, p. 252.
 13. Kramer: *Cinc. Lancet-Clinic*, 1902, p. 166.
 14. Edebohls: *N. Y. Jour. of Gyn. and Obst.*, vol. 2, p. 354.
 15. Wylie: *N. Y. Journal of Gyn. and Obst.*, vol. 2, p. 364.
 16. Murray: *N. Y. Annals of Gyn.*, vol. 2, 1888-1889.
 17. Ricketts: *Brooklyn Med. Journal*, 1902.
 18. Kelly: *N. Y. Med. Journal*, vol. 43, p. 222.
 19. Scott: *Trans. Ohio State Med. Soc.*, 1901, p. 246.
 20. Reed: Text Book of Gynecology, p. 618.
- 19 WEST SEVENTH STREET.

THE UTERINE CURETTE.

BY

HOWARD A. KELLY, M.D.

Baltimore, Md.

(With one illustration.)



SOME six years ago I described in the *AMERICAN JOURNAL OF OBSTETRICS* (Vol. 40, No. 6, 1899) a large, deeply serrated scooped curette for the rapid removal of carcinomatous masses at the vaginal vault. For about two years past I have found a somewhat similar instrument of value in curetting the body of the uterus for endometritis, for polypoid growths, and, above all, for the removal of an incomplete abortion.

With the dull curettes in common use I have never been satisfied, while the sharp instruments have not always seemed to do their work perfectly. If the curette is very sharp, there is, of course, the danger of cutting too deep into the tissue. I find that a moderately sharp serrated curette which I have had made engages the uterine tissues satisfactorily and rapidly, and apparently thoroughly removes the endometrium and any accumulated pathological debris.

I have these little instruments made in three sizes, using the two smaller for the ordinary removal of the endometrium, while reserving the larger size for retained membranes and decidua. I think that an open curette takes a better grasp on the tissues, and I prefer, too, to have a stout shank, with a comparatively light handle, so that the operator is constantly aware just how much pressure he is making, as the serrated loop is skilfully raked over the various portions of the endometrium. The sinuses ought to be

ade a little deeper than is shown in the figures.

TRANSACTIONS OF THE CHICAGO GYNECOLOGICAL SOCIETY.

Meeting of February 17, 1905.

The President, J. CLARENCE WEBSTER, M.D., in the Chair.

OVARIAN CYST.

Dr. THOMAS J. WATKINS.—I have a specimen of an ovarian cyst, which I show to call attention to the difficulty in diagnosis in some cases of these tumors. The difficulty here was the result of two conditions. You will observe that the walls are very much relaxed, and the intestine, which is large, contains a moderate amount of gas. The second difficulty presented on account of the long pedicle. This patient was examined once under an anesthetic, and we were unable to find anything definite enough to justify operation, and she was sent home. Later there was an indefinite mass found back of the uterus; she again came to the hospital, and on abdominal section this cyst was removed. One interesting point in the case was that the examination under an anesthetic was more indefinite than the examination without an anesthetic, on account of the relaxation of the abdominal walls. With the anesthetic one could not get the conjoined impulse as well as he could without the anesthetic. Usually in diagnosing ovarian cyst, we are not apt to keep in mind the possibility of the cyst wall having so little tension as to make it difficult to engage between the fingers.

Another interesting question is that one might ask as to the cause of such relaxation of the abdominal walls as we had in this case. It would seem as if the tension within the cyst would not have been enough to distend the cyst wall to this extent, and I would like very much if some one, in discussing this case, would throw some light on that phase of the subject.

DOUBLE HYDROSALPINX.

The other specimen which I have to present is a double hydrosalpinx. It was removed from a patient who had been operated upon three years ago for a large pelvic abscess, probably gonorrheal in origin. We do not often have an opportunity to see the condition of the tubes and ovaries three years after such an operation. Both abdominal ends of the tubes are occluded; the uterine ends of the tubes are both patent. A bloody fluid can be forced through each tube at the uterine end. The left ovary was practically destroyed; it contained a large corpus luteum, or a large hematoma.

This specimen brings up an interesting question as to the pathology of hydrosalpinx. As you know, there is some uncer-

tainty as to just what condition will produce a hydrosalpinx. Some contend that a simple occlusion of the abdominal end is not enough to produce a hydrosalpinx, and they point out that in order to have a hydrosalpinx there must be an occlusion of the abdominal ostium, and also an infection. These tubes undoubtedly were occluded three years ago, and they show how little fluid is collected in the tubes in three years.

APPENDICITIS OBLITERANS.

I also have an appendix here which is not of very great importance. It is a typical specimen of appendicitis obliterans. The mucosa of the outer half of the appendix has been almost completely destroyed, and the woman did not give a history of having had any severe trouble with the appendix. It was detected during an operation for an associated pathological condition.

Dr. CHARLES B. REED read a paper entitled

PERSISTENT MENTOPOSTERIOR POSITIONS.*

Dr. JOSEPH B. DE LEE.—There is very little to disagree with in Dr. Reed's paper. The points cannot be disputed. The more or less general impression that chin posterior positions are impossible labors has certainly no foundation. Since authentic cases have been reported by Braun and others, we have sufficient proof that they can occur. Carl Braun, in 1860, reported a case in which he delivered a child with the chin posterior. Dr. Cory, who died in this city not many years ago, delivered a woman in which the chin was posterior by means of forceps, and, as I understand, saved both the mother and baby, although the mother had a complete laceration of the sphincter and a laceration extending to the coccyx. When one considers that, in addition to the head having to pass through the bony pelvis, with the chin on the posterior wall, there is a long route to travel from the coccyx to the edge of the perineum before the face can be delivered, something must give way. While perhaps the head may readily go through a dry pelvis, as on a manikin, it is probably the soft parts that make the great difficulty in these cases on the living.

There is one point concerning which I would differ with Dr. Reed, and that is in regard to the use of statistics, percentages and mortalities. I would suggest as a new thought—at least for me it is—that we add to our usual mortality percentages a perhaps it might be so-called rational mortality. For example, Dr. Reed said the mortality of children in Cesarean section is 10 per cent. I have no doubt that he can collect statistics to prove that. But that is not the rational mortality of Cesarean section in infants. The rational mortality of children in Cesarean section is less than the ordinary mortality of head presentations. I am pretty sure that in Cesarean section undertaken for the proper indications the mortality of the child ought to be *nil*, even less than in

*See original article, page 615.

normal birth. Therefore, when we compare mortalities, it is just as well to compare rational mortalities.

Perhaps there is one point about rotation of the head I might refer to. We use the term impacted face presentation when the chin is posterior, or we use any other term that would express this condition, *i.e.* when the unrotated head is deep down in the pelvis. In face presentation rotation only begins after the head has come well down into the pelvis, and only when the face begins to press on the pelvic floor. The face enters the pelvis usually in the transverse diameter; that is, the facial line lies in the transverse diameter, and it comes down to the pelvic floor, with the chin more in the transverse diameter, and after reaching the pelvic floor the chin rotates to the front. Occasionally it rotates to the back. It is rare that the face will enter the pelvis with the chin posterior at the start and come down in that position. I think it is possible for the head to get into the pelvis easier in the transverse diameter, and the chin will rotate to the back, and then we have the so-called impacted posterior position. I have demonstrated on the mannikin that we can deliver the chin posterior, allowing the head to come down, with the chin in the transverse diameter, and then have it rotate to the back. The point Dr. Reed made, that the occiput will go into the hollow of the nape and stretch the neck, and thus we get a neck and head diameter, is quite well taken. Still, I have taken some babies, delivered in face presentation, and have found that the top of the occiput reaches to a line between the shoulder blades of the baby. I remember one case in which no amount of stretching would bring the occiput higher than between the shoulder blades of the baby. There is no doubt in most cases the occiput and the chest have to enter the pelvis together if the baby is to go through the pelvis in that position. The rest of the mechanism is laid down in the paper, but I think a point to bring out is that the chin rotates in the hollow of the sacrum after the head is engaged deeply in the perineum.

Should we treat chin posterior positions? I think we ought to treat a distinct chin posterior position that maintains itself in spite of strong pains for a relatively short time. If the pains are good and strong, rotation ought to take place in half an hour or three-quarters of an hour, and then is the time to treat it. I have become more radical in the last few years, because by waiting for nature to rotate these cases, I have twice been disappointed, and have had bad results. On the other hand, I have succeeded in some cases that apparently were hopeless, in rotating the head into proper position and serving both mother and child. Therefore, I feel that when we have a distinct chin posterior position that maintains itself in spite of strong pains for a relatively short time, the indication for interference is clear. If the head enters the pelvis in the transverse diameter, there is reason for waiting, and no reason for interference unless there is some other indication.

As to the method of interference, we have the use of forceps,

version and extraction, manual correction, and then, in a separate class, symphyseotomy. Casarean section and, as a last resort, craniotomy should be considered.

As to the use of forceps, I agree with Dr. Reed that this instrument is dangerous in face cases, and it is particularly dangerous in chin posterior positions.

I did not take time to look up my cases, but I know I have failed as often with the forceps as I have succeeded. I used the axis-traction forceps, and in these face cases I would not use any other. The operation in a face, chin posterior position with forceps is difficult. It is dangerous to the child. Anatomically, one can see why. In such a case the blade of the instrument would compress the neck and the vessels leading up to the brain; and the injuries inflicted on one infant were such as to convince me, without any further argument, that the forceps is a dangerous instrument. But when the head is engaged deeply in the pelvis, and anterior rotation of the chin is apparent, forceps is no more difficult in face than in ordinary occipital presentations. I would rather not use forceps, nor allow it in the treatment of face presentations at all except in a way to be referred to in a few moments.

Version and extraction are operations that can be done best when the head is not engaged, and when the uterus is not tetanically contracted. Forced version is attended with unusual risks in face presentation, and the indications in these cases, according to the paper, do not often arise for version, because it means a deep chin posterior position with engagement of the head, and when the head is engaged version is contraindicated. Nevertheless, in spite of the theoretical and classical contraindications to version, a case will now and then present itself where version is possible, and it will lead to a successful termination of the case when other operations are not possible. Of course, those are exceptions, and such cases will be selected usually by the man who has had the most experience with them.

The next thing to be considered is manual correction. We have Baudelocque's method of pushing up the face and pulling down the occiput from the inside. We also have Schatz's external method. Various combination methods have been devised of changing the face to an occipital presentation. I designed a method (I do not think it deserves to be called a special method) with which I have succeeded far beyond my hopes, and although it may not be entirely new, I took the liberty of publishing it recently in the *Chicago Medical Recorder*. The method is a combination of all the others plus operating on the chest of the infant. I have found that we can do a great deal of work with the hand in changing the attitude and position of the fetus, much more than we ever thought was possible, and in the last few years I have been extending the use of the hand greatly. In occipito-posterior positions, where the head is not completely engaged, even after a long labor, it is possible under deep anesthesia, to pass the hand alongside of the head, raise the head, get it free, pass the hand over the face,

get a purchase on the chest and posterior shoulder, and deliberately swing the whole infant into an anterior position. That the Germans are appreciating the importance of the use of the hand in these cases is evidenced from a recent article by Gottschalk in the *Centralblatt*. Bache Emmet wrote on the use of the hand in obstetrics in 1885. In a face presentation it is possible to change the attitude and position of the fetus with remarkable facility by the use of the hand if the manipulations are carried out right. In a chin posterior position, even though the chin is deep on the perineum, it is possible under deep anesthesia to raise the head, to turn it in the transverse diameter, pass the hand up until you reach the posterior shoulder and force the posterior shoulder to the side and press the chest in, and at the same time force the head down into the pelvis and then bring the occiput down. Now the forceps may be applied. It is possible, even when moulding of the head has taken place, in dolichocephalus. But this may interfere with the subsequent manipulation, as occurred in one case. I have tried this maneuver four times, and have succeeded four times in changing the face, in cases of prolonged chin posterior position, into right and left occipito-posterior position; and in three of them I succeeded in delivering the child rapidly.

In the one case I failed to deliver the child with forceps, because the dolichocephalus had been moulded. The uterus was tetanically contracted around the child's neck, and it was impossible to press the occiput down far enough to complete flexion. I lost the child under these manipulations, and had to do a craniotomy.

Symphiseotomy.—Symphiseotomy certainly comes into play, but I would agree with the speaker that it should only be done when the child is in prime condition. After moderate attempts have proven the futility of further manipulations, the operation is justifiable. I have had no occasion to perform it, because when I have gotten through with other manipulations, the baby or mother was so exhausted that it was foolhardy to try to save the child. Cesarean section will seldom come into the question. This operation is indicated for contracted pelvis, but not for face presentation. Unfortunately, craniotomy will still have to be the ultimate refuge in some of these cases.

DR. HENRY F. LEWIS.—The essayist has called our attention very forcibly to a fact which we have not all appreciated, namely, that persistent mento-posterior position is not impossible to deliver as almost every text-book has declared. I believe impossible is the word used by nearly all the modern text-books on obstetrics in regard to this position. Dr. Reed has collected seventeen cases out of seventy-five of persistent mento-posterior position in which the children were born spontaneously. He speaks of a fetal mortality of forty-five per cent. in these cases, although in seventeen cases the children were delivered spontaneously, leaving thirty-eight per cent. that were delivered in other ways, either by forceps or by the other methods he had referred to. In these cases of persistent mento-posterior position, the question of impaction

would come in early, and in cases of impaction the time for a great many of these methods already referred to in the treatment of face presentations has gone by.

I would take issue with the essayist regarding symphyseotomy versus craniotomy. In case of impacted head, with face presentation, or whatever the presentation may be, if the child is apparently in good condition, and the mother is not in a very serious condition, we should hold out long before we go so far as to destroy the life of the child when we have the method of symphyseotomy. The mortality of symphyseotomy is perhaps ten per cent., but even in these cases we must refer, as Dr. De Lee has said, to the rational mortality and rational percentages. A great many cases have been reported in which symphyseotomy has been performed, especially in the early days of its revival, that should not have been. But nowadays, considering all the facts, in properly selected cases, symphyseotomy comes in as the only operation, and I agree with Dr. De Lee that craniotomy should be our last resort. Dr. Reed spoke of one case he had come across where an impacted posterior chin in a face presentation was treated by symphyseotomy. I have reported one case, but it was not exactly a face presentation, but one of brow with posterior chin impacted in which symphyseotomy was done successfully both for mother and child.

The question as to the brow and the molding is an important one in these cases. Every face presentation really begins as a brow. As the brow presents, moulding will take place. The brow will protrude more and more, which means that when the head comes down lower, the brow, with its moulded protrusion, strikes the pelvic floor before the chin does, because it is the lowest point. The brow therefore rotates forward and, the longer we wait, the tighter the head becomes jammed in the pelvis, and the more likely we are to have the case terminate by posterior rotation.

As to the question of applying forceps to the face, it strikes me as a difficult and dangerous thing to the child. I would almost as soon, except when the face is on the perineum, do a craniotomy at once as to attempt the use of forceps. In most cases of face presentation the head comes in the transverse diameter of the pelvis while it is high, and if we apply forceps over the neck, trachea and larynx, we run the risk of doing great injury to the child with the blade on that side. The other blade does not fit over the rounded portion of the skull. It is only in cases where the head is extremely low, whatever the position of the chin, that forceps become useful or are justifiable. We must admit that rotation by means of forceps, while it is admissible in some cases of occiput posterior position, is practically out of the question in cases of face presentation with the chin posterior, because by the time we are sure the chin is not going to rotate forward, the brow rotates forward, and by that time the head is so tightly impacted that it is absolutely out of the question to use forceps with rotation, with any hope of safety to the mother's soft parts.

Dr. De Lee recommends passing the hand into the uterus, push-

ing up the head and turning. That necessarily involves pushing upwards to a considerable extent the head and pushing the child backwards into the uterus, in addition to pushing the hand in and perhaps a portion of the arm also into the uterus. When that can be done, version is perfectly feasible, and when we can do that, why not do version and have complete control of the case thereafter?

DR. GUSTAV KOLISCHER.—The great variety of opinion as to the occurrence and treatment of face presentations is to a large extent due to the fact that a great many authors are rather lax in their diagnosis. We should keep in mind that we can talk of face presentations only if it is possible to palpate the land-marks of the face. Neglect of this demand is the reason that so many brow presentations are diagnosed and published as face presentations.

As to the question of well-developed face presentation with the chin posterior, I am frank to say that I believe that to be an obstetrical impossibility. That a face should pass through the pelvis down to the perineum with the chin posterior would mean that the antero-posterior diameter of the thorax and the straight diameter of the head had to pass simultaneously through the pelvis. That belongs to the things I have to see before believing. There is no human pelvis of such size as to permit this kind of descent. That a man working on a roomy manikin may succeed in forcing the chin backward after the face is brought well down does not prove anything as to this question.

So far as the quotations from the literature are concerned, I do not remember now the article of C. Braun from which Dr. Reed quoted; but if the quotation is correct as to the weight of the child, C. Braun certainly later on must have changed his views on this subject. He always used to teach in his lectures that he never in his obstetric experience saw a face presentation pass through the pelvis with the chin backward. He observed this occurrence only once in a case of an immature fetus and under such conditions we cannot speak of a regular obstetric mechanism. Schauta states that in all his practice he never saw such a case. Practically the only German obstetrician who admits the possibility of the complete descent of a face with the chin posterior is Bumm, and if you look at the illustration in his text-book you will see at once that this illustration is anything but convincing.

So far as the descent of the face into the pelvis is concerned, Dr. De Lee mentions that the face descends to the perineum in the transverse position; that there is no rotation of the chin anteriorly until the face rests well against the perineum.

The maneuver of Dahlberg to which Dr. Reed alluded, is meant to make the face amenable for the application of the forceps by pulling the chin out of its position to the right or to the left into a position directly underneath the symphysis.

With reference to the treatment, I think it is a safe rule that face presentations should not be interfered with if there are no

complications ; but that we have to interfere at once if a complication is diagnosed.

Version should only be attempted if the head is still movable. As to the transformation of a face presentation into an occiput presentation, it is not correct to compare the danger to the integrity of the uterus to the danger produced by a combined version. In trying to transform a face into an occiput presentation we introduce only the fingers into the lower uterine segment, while in performing a version we introduce a forearm and in turning the fetus change the diameters of the uterus, thus stretching the uterine wall. All these efforts are not produced by Thorn's maneuver.

I fail to see what Cesarean section could accomplish in a case of impacted face presentation. Dr. Reed cautions against the use of forceps for trying to rotate the head. I want emphatically to endorse this statement.

DR. CHARLES E. PADDOCK.—We are indebted to the essayist for the very complete paper he has presented on face presentations, and which permits of little criticism. One statement, however, which he has made I beg to differ with. He states that interference in these positions is made in the interest of the child and not the mother. I claim that the interference should be made in the interest of both, and under certain conditions more in the interest of the mother than the child. When we stop to consider the infant mortality of twenty-five per cent. during the first five years of life, and the necessary increase in this mortality which is brought about by pathological presentations and positions of the child during labor, I think that we must consider the mother as being the more important of the two. When the chin rotates posteriorly, and the head becomes fixed in the pelvis, and the position cannot be corrected, it seems to me that craniotomy is more humane than symphyseotomy. When the point is reached where an operation of this kind is considered, the life expectancy of the child is not very great. So that I believe that such a serious operation as advised by some for the treatment of these cases is not the proper one. That forceps have a place, and should be used to a limited extent in persistent mento-posterior cases, I believe is correct.

DR. FRANK A. STAHL.—I would like to call attention to one or two points that are not clearly brought out in these discussions on face presentations. Many of our most classical men are not careful to define just what they mean in their discussions as regards where the face presentations take place. Does it take place in the superior strait or in the cavity, or at the outlet, under normal or contracted diameter conditions? No one rule of conduct or treatment will cover all these phases, therefore many of our best discussions lose value in that they are not clear. What to do with a case of face presentation under normal conditions of pelvis and soft parts seems sometimes a difficult problem in obstetrics ; yet I do not see why that should be. For instance, we find repeatedly that practitioners make a diagnosis of face presentation, when originally it was brow

presentation, or vice versa—this is only nature's attempt at auto-correction. In these cases, it is necessary only to correct the faulty presentation, especially in a chin posterior case; you try to push up the chin, and externally bring down the occiput; it is not difficult. We might go a step further and rule out those cases at the superior strait, in which the membranes had not yet been ruptured, leaving those for nature to correct. Let us take a case in which you are called in consultation to assist, in which the membranes have ruptured, and the patient has been in labor for say ten or twenty-four hours; what are you to do under these circumstances? Manual correction, podalic version and extraction, or if the face be in the pelvis or at the outlet, a simple cephalic rotation and forceps should readily deliver under ordinary circumstances. In the contracted pelvis these means may be tried; at the worst, craniotomy may be necessary—in all cases without maternal danger. It is here, I think, that teachers of obstetrics have conveyed a too gloomy impression to their students, as concerns therapeutics and operative treatment for these cases. They convey too much fear rather than confidence of happy result. Dr. De Lee described very clearly how easy it is to do clever work in the uterus. Obstetricians go into the uterus with more confidence to-day than they did formerly, and in this respect we have made a great advance. I do not understand why our classical teachers express such fear and lay so much stress on those cases with chin posterior, as they have been recognized by the practitioner for years. His remedy was and is, if not auto-corrected, either cephalic rotation, or, if necessary, podalic version and extraction. If we get the cases early enough, it will be a simple thing to push up the chin and bring down the occiput. Whether the chin be to the right or to the left, anteriorly or posteriorly, version can be readily accomplished by putting the patient in the Trendelenburg position; in the case of a primipara, chloroform may be required; in a multipara, the presentation often can be readily corrected without chloroform anesthesia.

As regards the question of operative interference, if I understood Dr. Reed correctly, he says we are to avoid or not to use forceps in these cases of face presentation at the superior strait. That is very good doctrine. I am speaking now from the standpoint of one who has had quite an extensive experience, in a congested, cosmopolitan district, and who has had to do a great deal of successful obstetric work to gain the confidence of his environment. These questions remind me of Smellie. This man came from the backwoods of England. He taught the London professors the means of correcting obstetrical errors, so far as delivery is concerned, by the simple means of introducing his hand into the uterus, and turning the child, and I believe he said, in many cases, he lost none of the mothers and very few of the children—and, too, this when anesthesia was yet a wizard's dream. His art was taught almost two hundred years ago, and holds true to-day. What has been suggested by some of our

German confrères, introducing the hand into the uterus, pushing against the child's chest, to so correct the malpresentation, then try to rotate the lead, may be good practice where there is little dilatation, but where there is relative dilatation, we should be ready to effect delivery by version and extraction. It is here that Dr. Reed lays stress on a good point. If we are that far, let us turn the fetus and deliver immediately.

There should be no question about losing the mother in face presentation; but can we save the child? Its chances under ordinary conditions should be good; never worse than with turning and extraction.

With reference to the treatment of an impacted case of labor, whether the presentation be anteriorly or posteriorly at the superior strait, I would resort to version, except where we have tetanic contraction of the uterus. Here the obstetrical problem of such a face condition gives way to a much greater one. There should never be a question as to rupture of the uterus in an ordinary case by a skilled hand. I have had over a hundred cases of turning and extraction, and among them face cases. In most of those cases I would go in single-handed, with chloroform bottle in one hand, and turn and deliver with the other. These women would soon get up and be without morbidity. That experience has encouraged me to continue along this line of treatment, for in many of these cases delivery is effected so easily. I know we can do it. But such favorable results are not true of forceps at the superior strait, or symphyseotomy, or craniotomy.

I hope the time is coming when obstetrical teachers will insist that symphyseotomy, craniotomy and Cesarean section in ordinary cases of face presentation ought never to be considered as proper treatment from the standpoint of the obstetrician. When we have a contracted pelvis, the conditions are different, but under ordinary conditions I do not think any of those operations are indicated.

DR. CHARLES S. BACON.—I would like to call attention to the fact that this discussion and the consideration of the treatment of face presentation, as well as some other abnormal presentations, emphasize the importance of exact phraseology or nomenclature. The question of the meaning of impaction is an extremely important one in the treatment of these cases. It seems to me, we must recognize a very simple definition, namely, that in whatever presentation the head passes through the obstetrical canal, it has passed through any strait when its greatest circumference has passed through that plane. The head is so mouldable as to form a wedge and will pass little by little onward, until its greatest circumference has passed through any strait, whether it be the superior or inferior strait, or the vulval opening. We know how the head passes through the vulva and how, little by little, it goes on until the greatest circumference has passed when the rest suddenly slips by. It is the same with the inlet and inferior strait.

The head is not impacted, that is, not immovably fixed in the pelvic cavity until its greatest circumference has passed the superior strait, and the greatest circumference in face presentation is, of course, the submento-occipital circumference. In the ordinary face presentation, that is, with rotation of the chin anterior, as has been pointed out, the presenting part is well down on the perineum, has passed some distance into the inferior strait; has got, in fact, near to the vulva before that circumference has passed by the inlet. This should be well-recognized in the management of these cases. In posterior rotation of the chin it is impossible that the greatest circumference shall have passed the inlet except in very rare cases, principally of small children. But ordinarily in a posterior rotation of the chin, the largest circumference has not passed the inlet. Therefore, it is impossible in all these cases to press the head back out of the pelvis and make a manual rectification, and that, it seems to me, should be emphasized. Failure to emphasize the fact that this treatment is possible and reasonable, leads to attempts at other manipulations, while the persistent inculcation of this truth would lead to a firm, persistent and successful effort. I think the similarity of these cases to those of impaction of the breech is close. What foolish and terrible operations are sometimes made on a case of impacted breech just because the possibility of pushing the breech up out of the pelvis and bringing down a leg is not recognized. I believe it is of considerable importance that the simple treatment of these cases be recognized, namely, that the head be pushed up because it is not fully in the excavation, the large circumference has not passed—push it up and make a manual correction.

DR. GEORGE SCHMAUCH.—Most of the gentlemen have discussed the operative treatment of face presentation. We have had considerable experience with these cases in Berlin, and as a report of 374 cases, embracing 10 years of emergency practice, shows, the best treatment for face presentation in the majority of cases was not to do anything.

With reference to the Thorn maneuver, I will state it has been used for many years in Berlin. However, in children with face presentations that were born spontaneously, there was a mortality of 13 per cent., anencephalia, etc., deducted 8.9 per cent.; whereas in the cases of face presentation treated by the Thorn maneuver we had a mortality of 25 per cent. This is explained by the fact that the maneuver was mostly used in cases of protracted labor. We have never seen a persistent mento-posterior presentation where the head descended really to the pelvic floor. I have performed Thorn's maneuver many times and used forceps in face presentation, but remember only one case where the face assumed a persistent mento-posterior position. The woman was a primipara. At twelve o'clock at noon I tried Thorn's maneuver without success; I left the case, examined the woman again at five o'clock

in the afternoon, the chin still being in a posterior position. The child was alive, and finally, at ten P. M., the chin was rotated sideways and a little anteriorly, and I used the forceps with good result for mother and child.

Thorn's maneuver in face presentations has great advantages, but these advantages are not so great as we thought they were some years ago. In many cases of face presentation the uterus is somewhat contracted above the head of the child. There is a certain ring to be felt, and this ring, by many obstetricians, is brought in connection with the existence of face presentation. Sometimes it is hard to pass this ring without causing rupture. We had two cases of uterine rupture by trying to convert a face into a normal presentation, and both women died. When I have sufficient reason to believe that delivery in vertex presentation will take place without difficulty, I employ Thorn's maneuver, but if the pelvis is somewhat contracted, I prefer version, as in my opinion it is easier for the woman and the obstetrician. We know that by Thorn's and similar manipulations the child's vitality is somewhat impaired. Before rupture of the membranes, I have made it a rule not to use these manipulations to change the position of the child unless the os is nearly fully dilated. Experience has shown that when within three or four hours these women were delivered, after we had changed the face presentation, the children were born alive; whereas if we waited, and the child was born in ten hours, it died either shortly after delivery or during labor. The changing of a face presentation has the same value in podalic version without extraction. Therefore, as soon as the child's head has descended to the pelvic floor, it is advisable to employ forceps. In my opinion, forceps in such face presentation is easy, and there is no other presentation where forceps fit the head so well as in face presentation. I do not expect any great advantage from symphyseotomy in impacted mento-posterior face presentation. The enlargement of the pelvic ring produced by symphyseotomy will not be sufficient to have the head, together with the breast, enter the pelvic canal.

Some of the gentlemen talked about the danger of occipito-posterior position after changing a face presentation. I do not know whether those gentlemen have made any observations regarding such an occurrence or not. In seventy-one cases, where we changed a face presentation, we had only one occipito-posterior position, and this case was complicated by an encephalocele. So this danger is more imaginary than real.

I think Dr. De Lee's maneuver of introducing the hand and getting hold of the foot, can only be performed when the head is very movable, but as soon as there is a ring which fixes the head, it is not possible to introduce the hand and arm far enough without endangering the mother.

DR. REED (closing).—Owing to the lateness of the hour, I have nothing further to say except that I am gratified at the free

discussion my paper has elicited, and I wish to thank the members for their antagonistic views as well as for their favorable criticisms.

DR. HELIODOR SCHILLER (by invitation) read a paper entitled
THE TREATMENT OF CHRONIC INFLAMMATION OF THE VAGINA
AND ENDOCERVICITIS BY YEAST.*

TRANSACTIONS OF THE SECTION IN GYNECOLOGY OF THE COLLEGE OF PHYSICIANS OF PHILADELPHIA.

Meeting of January 19, 1905.

The President, Dr. H. D. BEYEA, in the Chair.

DR. EDWARD A. SCHUMANN read a paper on

SECONDARY METASTATIC IMPLANTATION OF CARCINOMA IN THE
VAGINA.†

DR. W. A. N. DORLAND.—I would like in association with this very interesting paper of Dr. Schumann to refer to a suggestion that has occurred to me, and which, I confess, I am not able to answer: Is there any relation between this rare form of metastasis, which Dr. Schumann has reported, the downward current of Von Recklinghausen, and the fact which Dr. Baldy referred to at the St. Paul meeting of the American Medical Association, that all cases of recurrence of cancer of the cervix of the uterus which he had seen, had been below the line of junction or at the junction of the cervix and vagina and not above. This fact he emphasized in endeavoring to prove the futility of efforts at extirpation of the glands of the peritoneum above this junction to prevent the recurrence of the disease. If the recurrence never takes place in the chains of pelvic glands, but always below, it is evident that the extensive operation necessary to remove the glands only subjects the patient to additional traumatic risk without adequate guarantee of ultimate safety. The recurrence of the disease below the original site, it seems to me, may be altogether due to the reflex current of Von Recklinghausen save in the cases where direct implantation of the disease can be demonstrated.

DR. C. P. NOBLE.—As far as my own observation goes, I have never seen any evidence of implantation in my cases either of this type or of the epithelioma. The only case I ever saw which would in any way add to the theory of direct implantation, was a patient whom I saw several years ago at Bridgeton. The woman

*See original article, page 635.

†See original article, page 644.

had not only cancer, but sloughing fibroid. I removed the sloughing fibroid and concluded to wait until the field of operation was less septic before doing hysterectomy. At the time this sloughing fibroid was removed the vagina was normal so far as the clinical examination showed. A short time afterward I was sent for to do a hysterectomy. It was evident that in the brief interval a very great change had taken place, and that she was not fit to be operated on. She already had suppression of urine, and died in about twenty-four hours. In the two or three weeks that had elapsed there was a considerable growth of cancer in the posterior wall of the vagina. The wall had been injured by the speculum so there was a possibility that it was an implantation. If the case was not one of implantation, I have never seen one.

DR. H. D. BEYEA.—The interesting point in this case is the existence of metastasis. In a case which I reported a year or two ago, there was metastasis from an ovarian adenocarcinoma of the vagina. There was a growth in the vagina which was entirely submucous and of malignant character. I looked up every possible theory and studied the lymphatic system to determine how it could take place from carcinoma of the ovary, and it seemed only to be explained by reason of the recurrent lymph stream. It is strange that, having had two of these at the Gynecean Hospital, that more have not been reported in literature.

Every one here has seen sarcoma of the uterus that has been secondary and quite a distance from the cervix. This is not an implantation, but a metastatic growth beneath the mucous membrane developing in the connective tissue of the vagina. The interesting factor is that the woman has remained free from recurrence for more than a year. There is only a small scar composed of connective tissue in the right vaginal wall, where the metastatic growth was removed, and there is no indication of glandular enlargement and no sign of return in the line of abdominal incision. The woman is in perfect health, has gained in weight and is able to attend to her work.

DR. SCHUMANN.—I have nothing to add, except a word of explanation in reference to the course of the retrograde metastatic current which follows the ordinary mechanical principle, that obstruction to a flow of fluid in a tube with pressure continuing, causes the fluid to flow backward along the edges of the tube, while the current at the center is still progressing.

I have no definite knowledge of the connection of this form of metastasis with recurrence below the incision, mentioned by Dr. Dorland.

DR. JOHN COOKE HIRST presented the report of a case of

VAGINAL ATRESIA COMPLICATING LABOR.*

DR. R. C. NORRIS.—The case reported by Dr. Hirst is an extremely interesting one. I have never had occasion to do Cesarean section for the cases of stenosis that I have seen in

*See original article, page 641.

obstetric practice. I have seen a few cases. I think none were acquired. I know of one particularly interesting case in which there was a septum of the upper third of the vagina associated with a congenital anomaly of the uterus. The woman, the wife of a physician, had conceived in both sides of a double uterus, in all probability, a uterus didelphys. One side miscarried; the other side went on to term. The labor at term progressed normally, and I was about to make an incision to divide the double cervix and vaginal septum, when suddenly the obstruction gave way, and examination disclosed a laceration through the double cervix and extending through the septum, the obstruction thus being entirely overcome. At an examination several weeks later, one would not have suspected that there had been a double uterus and double vagina at its upper third with closure almost complete on one side. This bears out what Dr. Hirst has said about congenital obstructions in the vagina, that they are overcome by the natural processes and certainly by means of incision if other means of dilatation fail. I have never seen a case of acquired atresia. I can understand that it would be safer to do Cesarean section in such cases.

DR. W. A. N. DORLAND.—It has been my privilege to see one case of complete acquired vaginal stenosis in a Russian girl at the Polyclinic Hospital. She was delivered two years before she came under our care after a normal labor, and without any apparent cause the closure of the vagina had taken place. We found quite a collection of black, tarry blood in the upper portion of the vagina, and in the uterus after dissecting apart the vaginal walls. We endeavored to retain the patulous condition of the vagina by the use of glass vaginal bougies, but with only a moderate degree of success, and the case passed out of our hands after the opening had largely diminished. She has probably been operated upon by some other surgeon by this time.

DR. McREYNOLDS.—An acquired partial atresia may result from a plastic operation upon the vagina or perineum. In operation for complete prolapse in young women where it is necessary to remove a great deal of the mucous membrane, the dangers from subsequent pregnancies must be borne in mind. The resulting atresia may be so great that it may be necessary to induce an abortion, or if the woman went to term a Cesarean section might be necessary.

DR. THEODORE A. ERCK.—I have had two cases of atresia. One was a young woman, a midget in size compared with her husband. As a result of an inflammatory process following her first labor her vagina was practically obliterated by cicatricial tissue. I cut all the cicatricial bands, and made the patient wear a vaginal plug for some months. This woman subsequently gave birth to a child without great difficulty. I have now in the Gynecian Hospital a patient with congenital atresia. She was operated on nine times in a Western city. As a result of one of these operations, there developed a vesico-vaginal fistula.

When I first saw her I could introduce my little finger with some difficulty. I have operated upon her three times, and she will soon be able to leave the hospital. In the first operation I attempted the closure of the vesico-vaginal fistula and tried to make the vagina patulous enough for the introduction of a large plug, but this interfered with the entire healing of the fistula. The second operation was done chiefly to gain more room in the vagina and to dissect the cervix out of its nest of scar tissue, the plug being again worn for a period of six weeks at night only. Ten days ago I closed the remaining small vesico-vaginal fistula. I see no reason why this patient should not now perform all the duties of a wife.

DR. GEORGE M. BOYD.—Atresia of the vagina sufficient to demand Cesarean section is quite rare. I do not know whether I understood Dr. Hirst to say that he would have performed Cesarean section in the absence of pelvic deformity. There was a double indication for Cesarean section. In fifteen years at the Lying-in Charity, I have not seen a case of congenital atresia, and my opinion is that it is an exceptionally rare complication to labor.

DR. H. D. BEYEA.—I have seen two or three cases of congenital atresia with complete absence of vagina. In one case I made a new vagina by transplanting the mucous membrane and dissecting away the labia major and labia minora and carrying the mucous membrane up where the vagina should be. She made a normal convalescence. The vagina was kept open with a large glass tube $2\frac{1}{2}$ inches in diameter. An aluminum tube was made which she passed once or twice a day. There has been a little contraction. I suppose the new vagina is about 1 c.m. less. It was $4\frac{1}{2}$ c.m. at the time of operation. I am afraid that when the tube is removed the vagina may ultimately be obliterated.

DR. HIRST.—In reference to what Dr. Boyd said, I do not believe that in a case of uncomplicated atresia that Cesarean section is ever necessary. All of those cases can be managed, even at the worst, by deep incisions. I have seen only one case of acquired atresia. The vagina was represented by a solid mass of cicatricial tissue as dense and hard as the back of one of these benches. She was delivered by Cesarean section. I have also seen one case such as Dr. Beyea spoke of. For about eighteen months a tube about $2\frac{1}{2}$ inches in length, could be inserted easily. From then on there was shrinkage until now there is little more vagina than there was originally.

One other point, a little foreign to the subject, but the case struck me as a good illustration of the motor power of the spermatozoa. The opening in the vagina was so small that only by the use of considerable force I could introduce the catheter, yet the spermatozoa must have traveled through the opening and through the canal.

DR. R. P. REYNOLDS read a paper on THE USE AND ABUSE OF THE UTERINE CURETTE.*

*Will appear in JOURNAL for June.

DR. JOHN C. DACOSTA.—I am a firm advocate of the use of the curette in skilled hands, and skilled hands only. It is one of the safest and at the same time one of the most dangerous instruments we use. The operation is one of the easiest and one of the hardest, and success depends entirely upon the skill and training of the operator. A great deal of trouble has been caused by the use of the curette in the hands of unskilled men, and I have had to treat a number of perforations of the uterus from curettage, generally following abortion or miscarriage in unskilled hands. I have had as many as three such cases in one week. I would like to ask the gentlemen who have seen such cases, which horn of the uterus is perforated. I remember one case in which the left horn was perforated. All the other cases were in the right. The author did not speak of that condition in which curettage is most useful, namely: in anteflexion of the uterus. This condition is almost always accompanied with dysmenorrhea. All the menstrual blood cannot get out of the uterus and a chronic endometritis sets up. As a rule you can cure these cases by dilatation, curettage and packing with iodoform gauze, which, as a rule, I leave in for from one to five days. For the hemorrhage I have found very efficient the washing out of the uterus with a mixture of tincture of the chloride of iron and distilled water. Even in the presence of a submucous fibroid there is relief to the patient and arrest of hemorrhage. From an experience based upon many hundred cases of curettage of the uterus, I have seen nothing but benefit resulting from it when *properly* done. It, however, requires a trained man to do it, a man who has an eye in the end of his finger and who can extend that eye to the end of his curette and feel and know what he is doing. Above all, a sharp curette should never be used after a recent case of abortion or labor, where the uterus is soft and flabby. In such cases perforation is a common accompaniment of the use of the curette.

DR. STRICKER COLES.—The larger dull spoon-shaped douche curette is a valuable instrument in obstetrical practice. In removing pieces of adherent placenta, it can be used as an adjunct to the finger and later in puerperal cases to explore and irrigate the uterus. I have not been so unfortunate as to perforate the uterus, but can readily understand how such an accident may happen to anyone in cases after prolonged labor where there is sloughing of the uterine wall with possibly only the peritoneum separating the uterine and abdominal cavities.

DR. JOHN C. HIRST.—There are two methods for the relief of hemorrhage which I have not heard mentioned this evening. One is the use of the electrical current which has fallen into a good deal of disrepute. Used with a current of 20 to 40 milliamperes with the positive pole to the uterine sound, it has a distinct value as a hemostatic. Another method not applicable to fibroid tumors, but to metrorrhagia which resists ordinary treatment, is atmokausis of the introduction of live steam at a temperature of 115° C. to the uterine cavity, for a period of 10

seconds. I have seen this tried in fifteen or eighteen cases, and in every case the woman had been curetted at least twice previously, and in one case seven times. So far as I know none have bled since.

The method has also been employed in two cases of gonorrheal endometritis and both women are apparently well, one seven and one four months later. Of course, two cases are too small a number on which to base definite results, but the method promises, I think, well.

DR. W. REYNOLDS WILSON.—As to the use of the curette in puerperal cases I believe that in most cases of retention of placental fragments the exploration of the uterine cavity with the hands is so readily done that the curette is not indicated. The cases can be easily anesthetized and the os dilated to admit the hand freely, and I believe the uterus should be carefully explored and all portions of retained placenta removed manually. It is important to differentiate between the effects of incomplete retention of the ovum after miscarriage and the conditions present in subinvolution following delivery. In the first case curettage is always indicated and is the only practical way to thoroughly cleanse the endometrium. In the puerperal uterus my experience has led me to believe that the use of the curette is a mistake. The natural effort toward organization of the blood clots in the sinuses should not be disturbed. I have in mind two cases in which I feel perfectly sure the temptation to use the curette was a mistake. One case was an instance of subinvolution with suppurative endometritis in which I performed curettage and removed a certain amount of clot and considerable pus. The uterus was retroflexed and served as a cistern. In that case I had a very indifferent result. I believe that thorough irrigation would have cleansed the cavity and favored uterine contraction better than the curette. The case recovered, but with a slow, progressive fever. I have also in mind a recent case in which there existed a lateral placenta prævia. The lower portion of the placenta was attached to the uterine segment with a retention of a fragment within the internal os. The woman had a slight rise of temperature with hemorrhage. As soon as the diagnosis was made she was etherized and I discovered this attached portion. It was polypoid in character. I detached it with my finger and curetted. The woman had a sudden rise of temperature with some pulmonary symptoms embolic in character followed by puerperal infection. I feel that the use of the curette was more or less of a mistake. I rather feel it my duty to say from what experience I have had that, in puerperal cases the use of the curette should be resorted to only after the utmost careful study of the individual conditions.

DR. R. C. NORRIS.—It has been a working principle with me never to curette the puerperal uterus after miscarriage or labor at term, without exploring the uterus with the finger, in order to

be certain whether there is anything in the uterus that should be removed. This can be done always if an anesthetic is given.

I have for a year or more made a careful bacteriological study of cases of puerperal infection, noting the kind of infection, and in my experience the bacteriological findings have never helped me to decide for or against the curette. We should look for foreign material in the uterus and if it is present it should be removed, no matter what the character of the infection.

I would lay special stress upon the value of the curette after dilatation when we are treating a case of sterility, thought to be due to antelexion and stenosis. I believe the notion that antelexion, by mechanical obstruction to the spermatozoon, is a cause of sterility is not absolutely demonstrable. I think that when Dr. Goodell devised the uterine dilator and cured apparently so many cases of sterility that the results were due as much to the curette as to the dilator, since he always curetted the uterus at the same time. I can recall several cases where simple dilatation done for the relief of dysmenorrhea did not correct the sterility. These cases came into my hands and following the use of the curette, sterility has been relieved. So I have been forced to believe that in years gone by the curette has been of equal or greater value than the dilator in this class of cases.

As Dr. DaCosta has said, a man's technique makes the operator dangerous or otherwise, and I would add the proper selection of cases, for the result will wholly depend upon his surgical judgment and his technical skill. The fact should be emphasized that uterine curettage is not a simple operation and that the proper selection of cases and even its technique requires far more skill than a plastic operation on the cervix and vagina. Many general practitioners who undertake to curette the uterus will decline a formal plastic operation.

For the treatment of gonorrheal endometritis I have long ago discarded the curette as worse than useless. I find that a careful dilatation sufficient for the application of argyrol 30 to 40 per cent. is about as efficient as any treatment for this intractable disease.

DR. CHARLES P. NOBLE.—The general principles laid down are very sound. I presume that most men who have used the curette have perforated the uterus in this way. I am free to say that I have a number of times. There are some uteri so soft that either the dilator or curette will go right through. Where there is lack of skill this is more apt to occur, but the fact that perforation does occur is no reflection upon every man who has a perforation. I have seen it happen in my own hands when I was discussing the liability and demonstrating the great care that should be used. I have reported once or twice the most unique case of perforation of the uterus with the curettage that I have seen. A country physician of good repute and considerable practice curetted an abortion case and perforated the uterus. He pulled down the small intestine before he realized what he had

done. I operated upon the patient four hours after the accident. There were some three feet of small intestines pulled loose from the mesentery. I resected the bowel with the Murphy button and sewed up the hole in the uterus and a good recovery ensued. It was not ascertained on what day the button was passed, because the physician did not tell the patient what had been done.

I have been called in consultation in a number of instances in which the physician has curetted in the presence of diseased appendages. I think the point should be emphasized that it is the duty of the surgeon to open the abdomen and take out diseased appendages.

I believe the indications are few and the chance of doing good small in curettage in fibroid tumors. I think the case curetted by Dr. DaCosta in which there was fibroid with cessation of the hemorrhage for two or three weeks and then performance of hysterectomy is a very good case.

If we do curette where there is a fibroid tumor, either submucous or close to the mucous membrane, we are apt to get sloughing of the fibroid. It is practically impossible to curette the endometrium in a submucous fibroid tumor because of the irregularity. Therefore, you do not accomplish what the operation is intended to do: scrape off the endometrium. Therefore, except in subperitoneal fibroids or in intramural, the chances of doing harm are very great and the chances of doing good very small. In my judgment the circumstances should be exceptional for it to be good practice to use the curette in fibroid tumor cases.

DR. H. D. BEYEA.—My experience has been that the curette has never failed to diagnose any form of disease in the body of the uterus if curettement is properly done, all of the tissues removed and all of them examined.

I have never used the curette in fibroid tumors, except in those cases in which there was heart disease or advanced kidney disease, so that the major operation was contraindicated. In one case in particular in which there was a large fibroid tumor and the patient very anemic, and showing marked degeneration of the heart, I felt sure that subjection to a major operation would be fatal. I thoroughly curetted the uterus, applied carbolic acid to the interior of the uterus and packed with gauze.

We find some small tumors in the uterine cavity causing profuse bleeding and keeping the patients in bad health. If such tumors are removed, I believe the women would do well.

DR. McREYNOLDS.—I cannot agree with Dr. DaCosta when he advocates washing out the uterine cavity with equal parts of water and Tr. Chloride of Iron, or in leaving a gauze packing in the uterine cavity for seven days. I do not think this is good surgery.

I was glad to hear Dr. Hirst advocate a new method of treating gonorrheal endometritis, and hope the cases treated in the future will be as successful as the two cases he has reported to-night.

TRANSACTIONS OF THE WASHINGTON OBSTETRICAL AND GYNECOLOGICAL SOCIETY.

Meeting of January 6, 1905.

The President, J. Wesley Bovée, M.D., in the Chair.

DR. I. S. STONE presented "THE SAC AND FETUS OF A SO-CALLED BROAD LIGAMENT PREGNANCY." The patient, Mrs. M., colored, was admitted into Columbia Hospital on December 15, 1904. She was 32 years of age, had been married 10 years and had no children, but one miscarriage two years ago. She had been free from any pelvic or other disease which had any relation to the present illness. Her periods had been quite normal, and we failed to ascertain any history of salpingitis or pelvic inflammation. Her last period appeared in April. She had all of the usual symptoms of pregnancy, including a very large development of her breasts. In the latter part of August distinct fetal movements were felt which continued for at least six weeks and then subsided. During the latter part of October the abdomen and breasts became smaller, and the tumor then appeared to become harder and to be confined to the right side. During the month of November she had what she thought a miscarriage, or, as she was told, a "false conception," which passed away in flesh-like pieces. As we have not heard the particulars of this illness in November, we are in doubt about the "fleshy" "pieces," and think they probably were the usual decidua or clots which attend any form of ectopic gestation. On admission, December 15, the patient appeared to be in excellent condition, and was kept under observation until December 30, when operation was performed. The lower part of the abdomen was distended by a tumor which was hard and without fluctuation and reached a point on a level with the umbilicus. It was more prominent upon the right side, but reached across the entire pelvis. It was firmly fixed, its lower margin being very low in the pelvis and without the least sign of fluctuation. The uterus was elevated and pushed to the left; the cervix being high up behind the pubes and the fundus and the bladder carried along with it. She had no hemorrhage at this time, and we found no difficulty in making a diagnosis as recorded above. When the abdomen was opened, the tumor presented the usual characteristic features of a broad ligament pregnancy, and we proceeded to enucleate the specimen which is here exhibited. Just before the delivery of the mass a considerable quantity of fluid escaped from the sac, but otherwise the enucleation was completed satisfactorily. The tube was intact throughout its entire length, was adherent to the remnant of the ovary and to the sac. It was impossible to find the point where rupture had occurred. The sac was nourished by branches of the uterine and ovarian arteries, but no large vessels were found. The ureter was easily located under the peritoneum in its normal position. The readiness with which the sac was

removed would indicate that the pelvic peritoneum had not been disturbed by the development of the fetal sac.

DR. PETERSON had in similar cases the same difficulty as Dr. Stone in determining the relation between the peritoneum and the sac. In his experience there are two classes of cases, 1st, where the rupture has occurred into the broad ligament and not on the peritoneal side; and, 2nd, where there is a partial rupture into the peritoneum. In these cases the pregnancy is partly in the broad ligament and partly in the peritoneal cavity. From the appearance of the specimen, it looks as if it may belong to the second class of cases. The broad ligament is liable to displacements and, as in inflammatory cases, the appearance may indicate that the masses lie in the broad ligament when they really lie in the peritoneal cavity. When the adhesions are separated they are seen in their true relations.

The treatment of ectopic gestation is always an interesting subject. A good many English surgeons are treating these cases along conservative lines. Cullingsworth and a number of others treat conservatively and with reported good results. The speaker treats operatively either after the acute symptoms have subsided or at once, according to the exigencies of the case. He believes that all surgeons will eventually come back to the operative treatment. The conservative treatment in hospital cases may be tried as an experiment. In a number of cases he has been compelled to leave the placenta behind. In these instances he has packed with gauze and a number have resulted fatally. In one case he opened the cul-de-sac of Douglas and removed the fetus. The placenta could not be removed, and the patient died on the fourth day of sepsis. After the placenta has separated to a certain extent, the removal is easier. When there is the slightest evidence of sepsis he drains.

DR. FRY thought the most plausible explanation of the case was that the rupture occurred not later than the seventh week. The ovum did not die after the rupture occurred, but continued to grow into the peritoneal cavity, and the second sac was formed by adhesions.

DR. MILLER cited a case of his where the fetus was at or near full term and was alive. The placenta was attached to the tube. In this case it seemed as if the ovum lay originally in the tube and had been gradually expelled, leaving the placenta in its original situation in the tube. The only adhesions of the sac were to the omentum, around the umbilicus over an area the size of the palm of the hand and to the structures adjoining the site of the placenta.

It is difficult to say in a freshly ruptured case whether there is sepsis or not from the symptoms. In a case seen immediately after rupture the temperature was 103.5° F., pulse 140, and the leucocyte count 15,000. The elevation of temperature and the increased leucocyte count continued for two days, when the patient was operated upon. No drainage was used, and the patient made an uninterrupted recovery.

DR. STONE said that he did not doubt but that his case was partly tubal. The sac was not difficult to remove. The blood supply was limited. The specimen would pass generally for an ovarian pregnancy, but the ovary lay to one side of the sac and was not removed. He had a few days ago a very large, broad ligament tumor requiring the same operation. The relations were precisely the same as they had been in the case of ectopic pregnancy.

DR. MILLER reported a case of

TRANSVERSE PRESENTATION REQUIRING DECAPITATION.

The patient, an inmate of the Florence Crittenton Mission, began to have labor pains about 6 o'clock A.M., June 1, 1904. She was a multipara with a normal pelvis. She was seen soon after labor began by one of the visiting physicians, who thought it an occipito-posterior presentation. She was not reexamined until 7 o'clock P.M., when an arm was found presenting. After consultation an attempt was made to do a version. The other arm was pulled down instead of a leg. It was found impossible to perform the version. When I saw the case, about 10 o'clock, both arms were protruding from the vulva and were quite dark. The cervix was fully dilated and the chest of the child was jammed into the pelvis. The left shoulder was anterior, the chest towards the mother's left side and the head was markedly flexed backward in the trunk and high above the brim. The uterine contractions were forcible. An attempt was made to turn by pushing up the arms so as to seize a foot, but it was impossible to do so without using too great force. The child being dead, it was deemed better to decapitate. This was somewhat difficult. An arm was amputated at the shoulder to get more room. Then with a pair of long, straight scissors the decapitation was done by guiding the scissors with a finger in either side of the neck to prevent incising the uterus. No difficulty was experienced in cutting through the bones of the neck. The head was now pushed up and the trunk delivered without difficulty. The head was pushed into the pelvis and caught with a finger in the mouth and delivered. Placenta expelled by Crede's method. Convalescence was normal.

DR. FRY said that the case demonstrated the necessity of an early diagnosis of abnormal presentations. If the case had been recognized early, a version could have been performed and the child's life probably saved.

DR. PETERSON could not help thinking as he heard the case described of the difference between the present treatment of such cases and the older methods. The instruments formerly used were very complicated.

DR. E. E. MORSE read the paper of the evening, on

"PUERPERAL ARTHRITIS."

DR. KELLY said that he had never considered arthritis in connection with the puerperium. The connection between arthritis and sepsis had been impressed upon him by reading about the sup-

posed septic origin of rheumatism. The only case which had occurred in his practice went nine days after labor without fever and then developed arthritis. She was left with stiff joints.

DR. BALLOCH did not understand why the term puerperal arthritis should be applied to the condition. The proper term would be arthritis developing during the puerperium. It seems to him that it would be a distinct advance to dispense with the term rheumatism in cases of arthritis. We dose with salicylates and upset the stomach without benefit to the condition. The treatment in cases of arthritis following labor should be that used in gonorrheal arthritis, i.e. arthrotomy.

DR. STONE said Dr. Morse's paper called up some new ideas. The germ of rheumatism seemed to possess all the properties of the streptococcus. In his own first infection arising from a needle prick several of his joints became involved, and it was thought that he had rheumatism. He had tendo-synovitis also.

DR. FRY said that he felt some hesitation in putting himself on record in discussing the identity of a disease. He recalled the foolish discussions carried on about the identity of several diseases. Hirst mentions a case where a woman had rheumatism during pregnancy. After labor she ran a temperature of 101° F. Curettage and douching had no effect. The salicylates cured her. He remembers where a case of rheumatism affected the peritoneum. In rheumatism, after recovery the joint is as well as it was before, but such is not the case in arthritis, where in many cases there is a thickening of the membrane and at times ankylosis. The treatment is also different, rheumatism being cured by the salicylates which do not materially affect septic arthritis.

DR. PETERSON was inclined to agree with Dr. Fry. Most cases arising during the puerperium are due to sepsis. Rheumatism as a complication is rare. He has never seen one, but has seen quite a number of cases of septic arthritis. The diagnosis as a rule is difficult to make. The gonococcus is responsible for a considerable part of the cases of arthritis and infections after labor.

DR. SOTHORON said that the value of salicylates as a diagnostic agent is not so great. The salicylates will relieve almost any pain.

DR. MORSE asked the ideas of the members who do not agree with him concerning the nature of rheumatism. His case he believes to have been one of septic arthritis.

Meeting of January 20, 1905.

The President, J. WESLEY BOVÉE, M.D., in the Chair.

DR. J. RIDDLE GOFFE of New York read a paper whose title was
THE TECHNIQUE OF ABDOMINAL AND VAGINAL OPERATIONS FOR
THE RELIEF OF FIBROMYOMATA OF THE UTERUS.*

The discussion was opened by DR. J. T. JOHNSON, who said that he congratulated the society upon hearing Dr. Goffe's excel-

*See original article, page 577.

lent paper. He remembers very well when Dr. Goffe's original paper came out, but he had adopted Baer's method, and he put no sutures to close the uterine canal. The secretions from the cervix usually caused no trouble. Dr. Johnson had reported 25 cases of hysterectomy performed by Baer's method with one death. An abscess formed under the peritoneal covering above the cervix. The surgeons in Washington consider that hysterectomy for uncomplicated cases of fibromyomata in healthy subjects should have no mortality. The custom here is to do the abdominal hysterectomy except when myomectomy is performed. We have not quite reached the limit of New York, *i.e.*, that we advise the removal of all fibroid tumors, whether they cause symptoms or not. The vaginal operation is not done so much here as in other cities. It seems to him that less damage is done in the abdominal operation than by vaginal hysterectomy. The latter has, however, several advantages, the patient's consent is more readily obtained, there is less shock, less liability to hernia and no unsightly scar. It requires special skill to do the vaginal hysterectomy for large fibro-myomata successfully.

DR. FRY preferred to clamp the broad ligaments first and apply his sutures afterwards. He believes in leaving in one or both ovaries. He asked what advantage there was in leaving the tubes. In case of morcellation while he has had no mortality, some of his cases had sepsis and he believes the abdominal operation preferable.

DR. GOFFE.—He was the originator of the operation as was described in his paper. Baer made a modification and received most of the credit for the operation. In regard to the sweeping assertion that all fibromyomata should be removed, he had this to say, *i.e.* that formerly he had advised young women to wait, and there were not many but waited to have them grow, and after sterility, etc., finally had the tumors removed. Now he says to them, Have the tumor out; do not wait to have it grow or undergo degenerations or septic changes, but have the operation when it can be done with safety.

The president next introduced DR. JOHN LOVETT MORSE of Boston, whose paper was on

THE CARE AND FEEDING OF PREMATURE INFANTS.*

DR. FRY has used the incubator for a number of years and with success. It is very hard to know what size and age will allow the rearing of premature infants. Pure air and keeping the infant at the proper temperature are very important. He keeps the temperature in the incubator at 95° F. He believes in feeding by means of a stomach tube and uses a soft catheter for this purpose. By this means the baby is kept out of the incubator for its feeding a shorter time than where a feeder or bottle is used. About 30 per cent are reared when born at the

*See original article, page 589.

twenty-sixth week, and 60 per cent. when at the twenty-eighth week of gestation.

DR. ADAM's complimented the speaker on his paper. He is attending a woman of 30 years of age whom his preceptor, Dr. Busey, delivered. The child was regarded as premature, and was put aside as not being viable. It was heard to cry, was cared for, and is now a woman of 30 years. The chief value of the paper is that it is the result of the experience of one who works constantly along these lines in Boston hospitals.

TRANSACTIONS OF THE WOMAN'S HOSPITAL SOCIETY.

Meeting of January 24, 1905.

The President, GEORGE T. HARRISON, M.D., in the Chair.

PHANTOM TUMOR.

Dr. PINKHAM.—A young woman, 19 years old, unmarried, a servant, had been suffering with pains in her right side for five or six months. She had not menstruated for three months. The uterus was a little enlarged, and on the left side, apparently in the broad ligament and to the front of the uterus, was a tumor about the size of a grape fruit. I had several of the other men in the clinic examine her, and they all felt the tumor very plainly. She was referred to the Hospital with a diagnosis of ovarian cyst. I saw her the next day, and the house surgeon insisted that the patient was pregnant. Dr. Stimson, who saw the case later, informed me that he did not know whether she was pregnant or not, but he had not operated. I told him I felt the tumor very plainly, and that there was something in the broad ligament. I also was sure she was not pregnant, all the other signs being absent. I made a second examination, and inserted a sound into the uterus, which went in about three inches and no more. Dr. Stimson said: "I will give her ether to-morrow and examine her." He did not tell me what he made out under anesthesia, but he decided to operate, and he did. He opened the abdomen, but found absolutely nothing, either in the right or left broad ligament. The uterus was slightly enlarged, soft, and very movable, but there was no sign of any tumor.

Dr. GRAD.—I would like to ask Dr. Pinkham whether the patient was catheterized before operation. I saw a case not very long ago where I felt a mass in the pelvis which was plainly to one side of the uterus. After catheterizing the patient the tumor disappeared entirely. The tumor we felt was the uterus, pushed to one side by an over-distended bladder. The mass felt exactly like a tumor in the broad ligament.

Dr. PINKHAM.—The patient was catheterized, but she was troubled with constipation. It may have been a full rectum.

FECAL FISTULA.

Dr. BROWN.—Five years ago I removed from this patient a left-sided pyosalpinx. Six weeks ago I saw her again. She then had a large abscess in the right side, extending well up beyond McBurney's point. I made a diagnosis of appendicitis and pelvic abscess. I emptied the pelvic abscess by the vagina and opened the abdomen, and it might have been wiser if I had stopped there. I found that the appendix was not involved, but I went ahead and removed the abscess, which emptied into the rectum, and at the close of the operation found that a slit-like opening had been torn in the rectum. I sewed that up rather imperfectly, as the patient was in collapse. Provision for through and through drainage was made.

The opening into the rectum, which had been sewed up, broke down, and bowel contents appeared on the dressings. This state of affairs kept up for some time, but now the patient is doing well, although during the course of the recovery she developed pleurisy and pneumonia.

The vaginal incision, which was kept open by tubes, is now also closed, and the patient is having normal movements through the rectum. This rapid change only took place after I got the patient out of bed. The temperature having been normal, although sinuses existed and bowel contents were constantly coming through the abdomen as well as through the vagina, I picked the patient up and put her in a chair, and she stayed a certain length of time each morning and each afternoon, the time being gradually increased. My object in doing this was to get pressure of the intestines on the sinus. Within ten days after that the abdominal sinus was entirely closed. The patient is now entirely well.

EXTRAUTERINE PREGNANCY.

Dr. BROWN.—This patient felt that she had become pregnant. She did not wish to go on with the pregnancy, and attempted to bring on a miscarriage by the injection of water into the vagina. A flow finally came on, with considerable abdominal pain. This pain continued up to the time I saw her, a week ago. There was a mass on her left side. There was nothing in the uterus. A diagnosis of extrauterine pregnancy was made. Her temperature was 102° F. An operation was advised and accepted. The abdomen was opened and an unruptured tubal pregnancy was removed. There was no oozing; the pelvis was thoroughly dry. On the fifth day I found she was having some temperature. On examination I found a mass on the left side of the uterus at the place where I had removed the gravid tube. The mass was emptied through the vagina, and proved to contain nothing but serum. The temperature came down and stayed.

I report this case because it appears to me now that there was a primary infection of the gravid tube.

Dr. H. GRAD read a paper on

SARCOMA OF THE UTERUS.*

Dr. E. L'H. MCGINNIS.—There are a few little points that I should like to ask Dr. Grad about. One of these is in regard to the distance of the excited tube from the perineum. I understood him to say that it was *upon* the perineum, but cannot believe that such was the meaning he intended to convey, and presume he meant that the *rays* were to be thrown upon the perineum from a distance of several inches.

Another point was to ask him about the speculum he uses. It makes a vast difference to the vaginal mucous membrane whether it be of glass, rubber, or metal. It is my custom to use the old-fashioned Ferguson speculum of glass, as being nearly impervious to the rays, which the rubber is not. And if the ordinary bivalve speculum of metal is used, there is a strip of surface exposed on each side, which is unnecessary, and may be the seat of a burn, though the introduction of such a speculum is certainly easier and less painful to the patient.

In one case where the vault was involved in the cancerous degeneration, I used the glass trumpet-shaped spout from a little steam atomizer or inhaler, and found it satisfactory, as well as saving much of pain to the patient. This is only one of many makeshifts to which those of us who do this work must occasionally resort. In addition, it has hitherto been my habit to protect the legs, thighs, and vulva from exposure to the rays by the usual sheets of metal laid across the adjacent surfaces. The vulval shield has an opening, through which the glass speculum is passed, and is held in place by a little hook tied to a cord, the end of which is held by the patient herself.

As for the dermatitis the Doctor mentions, I can speak feelingly, as I am present in pain from the burning of my hands by the rays.

Dr. Grad has been extremely conservative in his final estimates of the true value of the rays as a curative agent, and while this is to be commended, and the fact emphasized that it is not a cure-all, I cannot but believe that he has been rather too sceptical, when I recall some of my patients, treated about two years ago, and in which, *so far*, there has been no return of any symptom. It seems to me that it is yet too soon to have a positive opinion upon that point, and while it is certain that recurrence does take place in a short space of time, yet in my cases there are more that seem to be well. In making this statement, I want to emphasize that I am as much opposed to overestimating its value as is the reader of the paper.

In regard to radium, while I do not believe it to be as potent as the x -rays in this connection, yet its ease of application to

*See original article, page 599.

the cervix, cavity, and other localities makes it a very valuable agent. It is my custom to place my tube within a cover of cellulose that I have had made, wrap tin-foil around it, and leave the end exposed for the free passage of the rays. In this manner the tube is protected from contact with the tissues, yet no obstruction is offered to the exposure of the diseased parts only. The whole is then placed in a split-stick, like a crayon-holder with a brass ring that is pushed up around it, and in this manner manipulation of it is easy.

TRANSACTIONS OF THE OBSTETRICAL SOCIETY OF LONDON.

Meeting of March 1, 1905.

The President, W. R. DAKIN, M.D., F.R.C.P., in the Chair.

DR. J. C. HOLDICH LEICESTER, I.M.S., read a short communication on a case of

CHYLURIA COMPLICATING PREGNANCY.

in an Eurasian, 18 years of age. She had been married eight months and had advanced to the eighth month in pregnancy. She presented herself for treatment at the Eden Hospital for Women, Calcutta, on account of severe pain on micturition. The urine had become milky for the first time on the previous day. For five months she had had a swelling in the right thigh, which had occasionally given rise to pain. The swelling felt like an enlarged gland in the femoral ring; it quickly subsided. On examining the urine drawn by catheter, it was milky white in color, with a faint pink tint and contained some white sediment. Sp. Gr. 1022. Faintly acid. Albumin $\frac{1}{4}$. Trace of blood. Chyle present. Phosphates in excess. On microscopic examination besides phosphates and oxalates and blood corpuscles, bladder epithelium and several *Filaria* embryos were found. The urine was found to clot shortly after being passed, but soon broke down again and remained fluid. Both the labor and the puerperium passed naturally except for a rise of temperature to 101.8° F. on the sixth day after delivery. The urine as a rule continued to preserve its milkiness. The blood was examined on three separate occasions, and on each was found to be swarming with *Filaria* embryos. The case resisted all treatment, whether of diet, drugs or posture, and the condition of the urine remained practically the same throughout. The patient's general condition showed considerable improvement during the time she was in hospital. In the author's opinion there was little doubt that in this case the pregnancy was the exciting cause of the Chyluria, which was due to the disturbance of the pelvic lymphatics which had been previously affected by Filarial obstruction of the thoracic duct.

DR. A. H. N. LEWERS related a case in

PREGNANCY IN A RUDIMENTARY UTERINE CORNU,

in which he had operated for severe internal hemorrhage. The patient was 24 years of age and had been married thirteen months. She had had a miscarriage at about the sixth month of pregnancy, six months after marriage. One menstrual period had occurred thirteen weeks after the miscarriage. On the day prior to her admission to the London Hospital, she was suddenly taken ill with severe pain in the abdomen. Preparations were at once made for operation. The patient's condition was so bad that both rectal and intravenous saline injections and hypodermic injections of strychnine were resorted to. On opening the abdomen the ovum was discovered on the left side. The sac burst on handling and a fetus of at least three months' gestation escaped with the liquor amnii. The pedicle was found to be much thicker than in a tubal gestation; it was transfixed and tied a second time to render it secure. On subsequent examination the wall of the sac proved to consist of muscular tissue, about half an inch in thickness, formed by the rudimentary horn on the left side. It was noted that the left ovary did not contain the corpus luteum, from which the author infers that external migration of the ovum from the opposite ovary had occurred. The patient passed a decidual cast eight days after the operation and made a good recovery.

DR. HERBERT WILLIAMSON showed a specimen of

GRAPE-LIKE SARCOMA OF THE CERVIX UTERI.

He remarked upon the rarity of this form of sarcoma of the cervix, only sixteen cases having been previously recorded. The specimen (which was removed by operation from a woman 39 years of age) consisted of a firm central core to which were attached a number of branching processes. These processes here and there throughout their length were dilated into cyst-like bodies the size of cherries. Microscopically the growth was a mixed-celled sarcoma; the cysts were covered on the surface by several layers of stratified squamous epithelium, and their fluid contents appeared to have accumulated as the result of edematous infiltration rather than of myxomatous degeneration of tissues.

DR. HANDFIELD-JONES brought forward the history of a case in which sarcoma of the same type had been found springing from the whole lining membrane of the body of the womb. In his own experience, the disease had shown very little evidence of malignancy, and the patient's life had been prolonged for several years after the disease was first recognized.

The President delivered his Inaugural Address.

REVIEWS.

GYNECOLOGY, MEDICAL AND SURGICAL. OUTLINES FOR STUDENTS AND PRACTITIONERS. By HENRY J. GARRIGUES, A.M., M.D., Gynecologist to St. Mark's Hospital in New York City, Consulting Obstetric Surgeon to the New York Maternity Hospital, Consulting Physician to the New York Mothers' Home and Maternity, Honorary Fellow of the American Gynecological Society, Honorary Fellow of the Obstetric Society of Edinburgh, Honorary Fellow of the College of Physicians of the German Dispensary, Ex-President of the German Medical Society, formerly Professor of Gynecology and Obstetrics in the School for Clinical Medicine, and Professor of Obstetrics in the Post-Graduate School and Hospital. With 343 Illustrations. Pp. 461. J. B. Lippincott Company, Philadelphia and London, 1905.

This work is written essentially for students and practitioners, and does not go deeply enough into the subject to be of value to the specialist. As a work for students, it has much to recommend it. It is concise, most of the cuts are not new but have been well selected. The arrangement and classification are such that the student should get a clear idea of the general subject and a definite picture of the various lesions that may be met in the different anatomical parts.

The work is divided first into a general division and a special division. Under the former is included a description of methods of examination, instruments and their use, and the general significance of different symptoms. Anatomy and physiology, we think properly, have been left largely to the anatomist and physiologist. Attention at the start is called to the different pronunciations of the word gynecology that are in common use, though the dictionaries recognize only the one—jin-e-kol'o-ji.

In Chapter V, under the title, Bloody Discharge from the Genitals, is described normal menstruation and the significance and importance of irregular bleeding.

The special division begins with diseases of the vulva. Malformations are described at some length and very well. The section on tumors should not have included varicose veins and hematoma, but should have been limited to new growths. Under lacerations of the perineum, no mention is made of Emmet's operation, an operation so classical that all students should be familiar with it. Displacements of the uterus are well treated. Pessaries are recommended for retroversion only when the patient refuses operation. Alexander's operation is given the place of preference. The statement "Since every laparotomy contains an element of danger to life, even if now-a-days it is small, it is hardly justifiable to perform it for an uncomplicated retroflexion," will

not be accepted as correct by many surgeons who have less confidence than the author in Alexander's operation. For prolapse of the uterus in women of advanced age Lefort's operation is recommended. Ventrofixation is not mentioned at all in its treatment. For fibroid tumors of the uterus that require the removal of the uterus the author favors the vaginal hysterectomy, if the tumor is not larger than a child's head. Comparing supravaginal and complete hysterectomies, the author puts the mortality following the latter operation at twice that of the supravaginal hysterectomy. This is certainly not the experience of most operators. It is difficult to imagine a case of fibroid tumor of the uterus which would require treatment with the extraperitoneal fixation of the stump. That is an operation that should no longer be performed, and should not appear in a book for students. Regarding the etiology of carcinoma of the uterus, we do not agree that it is necessarily a disease of advanced age, nor that it is more common among the poor than among the wealthy, nor that carcinoma of the cervix is usually due to childbirth. Diseases of the tubes are treated briefly, though most of the salient points are included. Tuberculosis of the tube is described under Neoplasms. We are surprised that no mention whatsoever is made of ectopic pregnancy.

Chapter VII has the title Diseases of the Pelvis. It includes diseases of the ligaments, pelvic cellular tissue and pelvic hemorrhage. The treatment of pelvic hematocoele that is recommended is expectant, unless suppuration takes place or absorption is too slow, then a vaginal incision for drainage is indicated.

In conclusion we consider that for students the work is too brief on many subjects to receive common acceptance as a text book. It is well that in any work we should find the personal ideas and opinions of the writer regarding the etiology, pathology, etc., of a disease, together with his own method of treating it. The writer has carried out this plan, but often by excluding ideas and methods that are commonly accepted. T.

MANUAL OF GYNECOLOGY. By D. BERRY HART, M.D., F.R.C.P.E., F.R.S.E., Lecturer on Midwifery and Gynecology, School of the Royal Colleges, Edinburgh; formerly Physician, Royal Maternity and Simpson Memorial Hospital, Edinburgh; Gynecologist to the Royal Infirmary, Edinburgh; Consulting Gynecologist, Leith Hospital; Honorary Fellow of the American Gynecological Society and of the Berlin Obstetrical Society; Corresponding Fellow of the Leipsic Obstetrical Society; and A. H. FREELAND BARBOUR, M.A., B.Sc., M.D., F.R.C.P.E., F.R.S.E., Lecturer on Midwifery and Diseases of Women, School of the Royal Colleges, Edinburgh; Physician, Royal Maternity and Simpson Memorial Hospital, Edinburgh; Assistant Physician for Diseases of Women, Royal Infirmary, Edinburgh; Physician for Diseases of Women to the Cowgate Dispensary; Corresponding Fellow of the Leipsic Obstetrical Society and of the Royal Academy of Medicine of Turin. Sixth

edition, pp. 736, with 12 lithographs and 359 woodcuts. Chicago, W. T. Keener & Co., 1905.

In this new edition of a well-known and valuable work on gynecology the general plan of previous editions has been followed in many chapters with comparatively few changes. At the beginning of each chapter is a list of the literature of the subject. This list would be of value if it contained references to more recent literature. From the head of one chapter taken at random, of twenty-two references, all excepting three appear in an edition of nearly fifteen years ago; of these three exceptions, only one is more recent than 1898. Even references given as footnotes are not all recent.

In Part I, including the anatomy and physiology of the female pelvic organs, examination and instruments, there have been few changes. Regarding the perforation of the uterine wall with a sound, the statement "this does no harm" of a previous edition is changed to "this *may* do no harm." Tents are again described at some length, and their use, as recommended by the writers, is not in accord with the customary treatment in this country.

Asepsis is given a more prominent position than formerly, though no mention is made of the use of rubber gloves in preserving it.

The subjects Pelvic Peritonitis and Pelvic Cellulitis are handled badly. These are definite conditions, but practically they always exist with other demonstrable lesions as the primary disease, and there is no longer any more reason for describing them as separate diseases than for describing "idiopathic" peritonitis as a separate disease. Carcinomatous infiltration of the parametrium is entitled to description separate from carcinoma of the cervix to as great an extent as pelvic cellulitis is to description separate from the primary focus of infection. The tables for the differential diagnosis of pelvic cellulitis and pelvic peritonitis are now as incomprehensible to the reviewer as they were difficult for him to learn as a student fifteen years ago. The expression Malignant Peritonitis is a misleading one. The condition described is not an inflammatory disease, and should not be considered as a form of peritonitis. That which has been said regarding Pelvic Cellulitis and Pelvic Hematoma can be repeated even more strongly about Pelvic Hematoma and Pelvic Hematocele. Ectopic pregnancy is a disease that is too frequent and too important to be obscured under the heading Pelvic Hematocele and Hematoma.

The chapters on diseases of the Fallopian tubes and of the ovaries are well written. The pathology and operative treatment described follows the lines accepted by most writers of the present time. The value of leucocytosis in inflammatory disease of the appendages as an aid in diagnosis and in determining the question of operation is so great that mention of it should have been made in this chapter, but the writers have neglected the subject entirely.

Under the prognosis of carcinoma uteri, regarding its spontane-

ous cure, we find the sentence, "There is one apparently well authenticated case recorded by Habit." As this case was recorded in 1864, a more nearly correct impression of the prognosis of carcinoma uteri would be given by omitting all reference to this case.

Under the operations for the repair and laceration of the perineum, Emmet's operation is given the first and by far the most prominent place. In the appendix of forty-two pages the technique of an abdominal section, together with possible complications and accidents, are described.

Regarding the book as a whole, we doubt if this new edition will add materially to its reputation in this country. Along many lines, as has been indicated, the work has not been revised sufficiently to bring it up to the present time. The cuts do not compare with those of many of recent American works on gynecology.
T.

THE INFLUENCE OF GROWTH ON CONGENITAL AND ACQUIRED DEFORMITIES. By ADONIRAM BROWN JUDSON, A.M., M.D., Orthopedic Surgeon to the Out-Patient Department, New York Hospital, 1878-1903, Statistical Secretary of the New York Academy of Medicine, formerly Chairman of the Orthopedic Section of the New York Academy of Medicine, formerly President of the American Orthopedic Association, Member of the American Medical Association, Fellow of the American Academy of Medicine, formerly Surgeon U. S. Navy. Pp. 276, profusely illustrated. New York, William Wood & Co., 1905.

Especial attention is given in this little work to the important influence of growth in the correction of congenital and acquired deformities. The subjects that are considered are: Congenital club-foot, tuberculous joint disease, especially of knee, hip and spine, and lateral curvature of the spine. No attempt is made to cover other subjects in this branch of surgery.
T.

DUPLICATE TWINS AND DOUBLE MONSTERS. By HARRIS HAWTHORNE WILDER, Ph.D. From the Zoological Laboratory of Smith College. With 2 plates and 11 figures in the text. Reprinted from the *American Journal of Anatomy*, Vol. III, No. 4, pp. 387-472. September 20, 1904.

This monograph describes in detail multiple births and composite monsters and the relationship between them. The various theories regarding the cause of twins and monsters are given in detail. Beginning on page 398 is a classified list of composite monsters, with examples of different types gathered from recent medical literature and from history. The monograph is thoroughly scientific, exceedingly interesting and entirely beyond any criticism or comment by one who has not made a special study of the subject.
T.

BRIEF OF CURRENT LITERATURE.

OBSTETRICS.

Functions of the Female Breast.—Otto Rommel (*Münch. Med. Woch.*, March 7) gives the results of the treatment in the first year of the new Infants' Hospital at Munich. Breast feeding is becoming less and less frequent. It has been estimated by Ehrlich and others that from 60 to 80 per cent. of mothers either cannot nurse their children or have not enough milk for them. On the other hand, the results of artificial feeding are often bad. The regimen employed in the Infants' Hospital was successful in enabling all the mothers to nurse their own children, and in some cases two and three others were nursed at the same time. Most of these mothers came from the Krankenhaus immediately after their discharge from confinement, from eight to ten days after labor. Many of them had very little milk when they came, 100 to 200 grams only. Soon after reaching the hospital the milk began to increase until it reached from 1,200 to 4,000 grams in 24 hours. The patients were not well nourished, belonging to the poorer class, with bad teeth and other signs of poor nutrition. The diet was made as nourishing as possible, with a good amount of albuminous and fat-producing materials. They drank from two to two and a half liters of a mixture of water and milk per day. The author thinks beer is allowable. No galactagogues were used. Massage is of the greatest value, stroking the breast radially toward the nipple and kneading it, preferably when empty. That the child should nurse well is important; a strong nurser gives a good milker. Only one breast should be nursed at a time, so as to empty the breast entirely. The intervals should be long between nursings. Each nursing should last not more than ten or fifteen minutes. The absence of fissures and abscesses of the breast he consider to be due to the fact that the children's mouths were not washed out. The author believes that this gives rise to denuded spots of epithelium and stomatitis, from infections by streptococci, etc., and that this infection is communicated to the breast.

Rupture of the Lateral Walls of the Vagina During Labor.—Lutaud (*Jour. de Méd. de Paris*, Feb.) calls attention to the comparative frequency of rupture of the lateral vaginal walls, the fourchette remaining untorn. Of 115 women confined at the Charité, 32 cases had lateral ruptures without perineal wounds, and 49 cases showed a combination of the two. The author has himself observed four cases of this condition. He concludes that lateral tears are not rare; that the prognosis is good; that they may be sutured, but heal easily if left alone, and that they leave marks on the lateral vaginal walls that may aid in the diagnosis of past pregnancy in medicolegal cases.

Prevention of Puerperal Fever.—Heinrich Dörfler (*Münch. Med. Woch.*, Feb. 28) gives what he considers the causes and best preventive treatment of puerperal fever as it exists in Bavaria. He believes that the real cause of the existence of puerperal fever, in these days of asepsis, is the carelessness and ignorance of the uneducated midwives. They come from the common working people, and are called from all sorts of rough household duties to attend labor cases. Their hands are not carefully sterilized; from their texture they are not capable of it. The sum paid for their services is so low that they cannot afford expensive antiseptics, or fresh douche bags. They examine frequently during labor, with unwashed hands, use dirty cloths about the vulva and unsterilized water for washing. This dismal picture, he claims, is characteristic of the service of the midwife in country districts. The women who care for the patients during the puerperium are still worse. The author gives us the axiom, "The less hands, the less infection." For the last ten years he has allowed no interference by the midwife during labor or the puerperium. He has himself used the most rigid aseptic and antiseptic care of hands, vulva, vagina and everything employed about the patient. As a result, he can point to a series of 543 cases of labor without a single case of sepsis, with only two cases of fever, due to other causes, and without a death. He believes that 98 to 99 per cent. of infections are due to examinations and manipulations of the genitals. In many cases he finds the mild sepsis after confinement by midwives causing retroflexion of the uterus, metritis and less important inflammations of the genital organs. His recommendations for prophylaxis are these: 1. Keep the genital canal aseptic. 2. Do not destroy the efficient work of nature. 3. Absolute asepsis of hands, person and external genitals. 4. Use of aseptic rubber gloves by all midwives. 5. Absolute asepsis of everything that touches or comes near the genital canal. 6. No douches except by the physician. 7. Vaginal examinations by midwives from one week previous to labor to the end of labor only with sterile rubber gloves. The midwife to leave two hours after labor. 8. Service of midwives to be controlled by government, and good work stimulated by premiums. 9. Classes for instruction held throughout the year. 10. Courses in aseptic and antiseptic methods to be required of every one who cares for a case of labor.

Puerperal Nephritis or Nephritis in Pregnancy?—Silvestri Torindo (*La Riforma Medica*, Feb. 15) thinks that we should not admit that there can be a toxemia truly dependent on the pregnant condition. Clinical and experimental results tend to show that puerperal eclampsia is a syndrome the result of several factors; pregnancy simply prepares the ground for the action of the other causes. It produces in the cerebral organism of the mother peculiar conditions, that may reappear in the brain of the infant. By causing a lessened resistance in the nervous system, and an overloading of the emunctories, with an insufficient action of the

glands that produce antitoxins, pregnancy becomes a powerful predisposing cause of nephritis. We should, therefore, speak rather of a nephritis occurring during the puerperium than of puerperal nephritis.

Treatment of Eclampsia of Pregnancy by Parathyroidine.—G. Vasale (*Rivista Critica di Clin. Med.*, March 4) reports the production of a specially strong extract of the thyroid gland, which he has used with success in three cases of eclampsia in pregnancy. He calls this extract parathyroidine, or parathyreo-antitoxine, because it seems to have an antitoxic action against the still unknown cause of eclampsia of pregnancy. The effect on the convulsive seizures was remarkable. The author inclines to accept as the cause of these convulsions a theory of the toxin resulting from changes in the thyroid body. He has used his extract in a case of classic tetanus in a baby, with good result, and has treated three cases of epilepsy, with the effect in two of modifying the convulsions. The author prefers to withhold an opinion as to the efficacy of parathyroidine in epilepsy. He would recommend its use in cases of all forms of tetanus, convulsive and spasmodic, in babies, in Basedow's disease and in psychoses. The extract is prepared by the Institute for Sero-Therapy at Milan.

Maternal and Fetal Prognosis in Infection of the Amniotic Fluid.—Ercole Cova (*Annali di Ostet. e Gin.*, Feb.) records the treatment of 27 cases of infection of the amniotic fluid in five years at the Clinic of Florence. Of these, 22 recovered and 5 died; of the children, 5 lived and 22 died. The condition is the result of the premature rupture of the membranes, and the prognosis is worse the longer before labor it occurs, since the opportunity for infection is of greater duration. Infection is usually brought about by examinations or manipulations in the vaginal canal to effect delivery. If the membranes rupture during pregnancy, if there are no uterine contractions, and if no examinations are made the danger is slight. In labor the intermittence of the pains causes an aspiration of germs from the vagina with liquids. Gonorrhea, placenta previa, position of the fetus other than vertex, such as breech, which is not closely applied to the superior strait, monstrosity of the fetus, carcinoma in the putrefactive stage, lacerations of the cervix, cutting the cervix to facilitate delivery, all act as predisposing factors to the infection. The condition is diagnosed by fever, rapid pulse, dyspnea, fetid discharge from the vagina, and tympanites of the uterus from presence of gas. The prognosis is worse the longer the condition lasts. The micro-organisms found in the amniotic fluid may be streptococci, staphylococci, bacterium coli, bacillus ærogenes capsulatus, sarcina lutea, etc. The most severe infections are caused by the pus-producing germs and the ærogenes capsulatus. The presence of gas in the uterus is a bad sign, as is excessive distention, or the death of the fetus. Complications, such as albuminuria and eclampsia, render the prognosis worse. Death may result from the suction of gas into the veins. Placenta previa increases the gravity of the case

to a marked degree. Death of the child generally results, apparently from prolongation of labor, possibly from the absorption of poisonous materials from the amniotic fluid or from the circulation of the mother. Preventive measures are all such as tend to maintain the integrity of the sac. After rupture, rest in bed and protection of the genitals by sterilized compresses. No interference to bring on labor is justifiable as long as sepsis does not exist. When it occurs the indication is to dilate, extract and disinfect the uterus as rapidly as possible.

The Transmissibility of Microorganisms from Mother to Fetus by the Placenta.—Jovane and Chiarolanza (*La Pediatria*, Oct., 1904) record their experiments with broth cultures of various germs in gravid rabbits, injected into the auricular vein, subcutaneous dorsal tissue, and peritoneal cavity. Endovenous injections of bacterium coli, pneumococcus, streptococcus, and staphylococcus pyogenes aureus pass into the fetal circulation only when large doses of virulent cultures are injected, and even these do not do so when injected subcutaneously. In those animals that died of septicemia the germs were found throughout the placenta.

Metabolic Changes During Pregnancy.—Carl Hahl (*Archiv f. Gyn.*, 1905) details experiments upon two women to determine the excretion of nitrogen during the last weeks of pregnancy. They were fed on a mixed diet, all accurately weighed, and all excreta were carefully collected and the nitrogen estimated. The conclusions are as follows: 1. During the last part of pregnancy there is a marked decrease in the excretion of nitrogen. 2. This excretion diminishes gradually, and shortly before labor it is most marked. 3. The nitrogen retained is equal to the amount excreted. 4. After labor there is a loss of nitrogen due to the involution of the uterus. 5. This loss continues for two weeks, and the nitrogen then begins to be retained.

Hemorrhages in Eclampsia.—Ralph Waldo Tobenstine (*Amer. Jour. Med. Sci.*, Feb.) from an analysis of six cases of hemorrhagic eclampsia, finds a group of symptoms that are most striking, that are quite characteristic of this type of eclampsia, and quite unlike any other form of the disease. These symptoms are the profound toxicity, the jaundice; this is far more constant and more marked than in the ordinary type of cases. It was present in all the cases under discussion. The abdominal distention is usually both a prominent and an early symptom, and is at times most distressing. It begins as an epigastric distention, which then gradually becomes generalized. This is of bad omen, and in every case of eclampsia, if it develops, we should be on the watch for hemorrhagic complications. Vomiting consists of clear fluid or curdled milk, then of bile, and finally of coffee-ground fluid or clear blood. Pain and tenderness over the liver are often of great intensity. Hemorrhagic manifestations other than vomiting of blood. The chief pathological features of the cases under consideration, as well as of the severer cases of eclampsia without hemorrhages, are: (1) The development of multiple hemorrhagic

foci in the various organs. (2) The development of thrombic processes in many of the smaller vessels. (3) The formation of irregular-shaped areas of necrosis in the several organs of the body, especially in the liver, these necrotic areas being largely dependent upon the thrombi mentioned above. These thrombi are at times recognizable with the naked eye; more often they are not. They are not artifacts, nor are they placental cell emboli, as they were at one time thought to be. They consist mainly of hyaline material.

Vaginal Cesarean Section.—C. Jeff Miller (*N. O. Med. & Surg. Jour.*, Feb.) gives the advantages of this method as follows:

1. In severe eclampsia, when the woman is unconscious between the convulsions, the cervix rigid and elongated, and delivery imperative, it is always preferable to abdominal Cesarean section, and, under proper surroundings, may be preferable to metal dilators.

2. In severe cases of accidental hemorrhage, when the cervix is closed, it is safer than the other methods of accouchement forcé, owing to the rapidity with which the uterus can be emptied, and should be given preference over abdominal hysterectomy, which is generally advised.

3. It may be considered in other conditions where Cesarean section is indicated, except in contracted pelvis, or dystocia arising from maternal or fetal disproportions.

4. It has not the disadvantages of an abdominal operation, the peritoneum need not be opened unless hysterectomy is to be performed for malignancy, and there is less shock than follows abdominal operations.

5. It is not more dangerous than attempting to deliver either by version, or forceps, when the os is not fully dilated, if done under strict aseptic precautions.

Ventrosuspension.—J. B. Killebrew (*Mob. Med. & Surg. Jour.*, Jan.) advocates the round ligament ventrosuspension of the uterus as the most universally applicable and surest in its results. He reports an operation of this kind performed on a nullipara who became pregnant two months after the operation and was delivered normally at term. After delivery the uterus remained in its normal position.

Lutein Cell Changes in Atrophied Follicles—a Physiological Appearance During Pregnancy.—Ludwig Seitz (*Zent. f. Gyn.*, March 4) advocates the opinion that the changes in the lutein cells of the ovarian follicles during pregnancy is a physiological, rather than a pathological process. He has examined the ovaries of 36 women, operated upon for various pathological conditions during pregnancy, from the second month to the end of pregnancy and even during the early puerperium. In them all he found hyperplasia of the lutein cells of a high grade. In every pregnancy several follicles that have matured are found, as well as follicles that show cystic degeneration. Besides these are found true lutein cysts, with a lining of lutein cells, from 5 to 20 layers deep, orig-

inating from the theca interna of the follicle. They are easy to diagnose as long as the follicular epithelium remains intact, but when this has disappeared and the lutein layer has thinned, it is difficult to recognize them as lutein cell cysts.

There are also atrophied follicles in which the lutein cells have undergone hyperplasia, and then the follicles have been compressed and flattened. These lutein cell changes may occur when a vesicular mole is formed in the uterus, a manifestation of polycystic degeneration, the result of edema of the ovarian stroma from disordered circulation. They are also found with myomata, and with all degenerations of the ovary due to circulatory changes. In pregnancy the changes begin about the end of the second month. The author concludes that the lutein cell degeneration is a physiological process, and produces a specific ovarian secretion, which is of value to the mother in the metabolic changes that go on during pregnancy.

Pregnancy with Anomaly of the Generative Organs.—O. Besta (*Giornale Internaz. delle Sci. Med.*, Feb. 28) describes a case of unusual interest because of the occurrence of pregnancy in a female, so deformed as to have neither bladder nor vagina. There was complete extrophy of the bladder, there being only an area of modified mucous membrane of a red color, about ten centimeters in diameter, over the lower part of the abdomen. In the lower part of this area were situated two small orifices, from which the urine came away drop by drop. To indicate the vagina there were only two short tabs of skin, just below the vesical surface, covered by a few hairs, and below this a very small opening a few millimeters in diameter, from which menstruation had occurred regularly from the age of 18 years. This orifice was about 12 centimeters from the anus. There was entire absence of the pubic arch, the bones being separated in front about four fingers' breadths. By palpation of the abdomen, when the patient presented herself, in about the seventh month of pregnancy, the uterus could be felt in the center of the abdomen, at the level of the umbilicus. The fetal heart sounds were heard, and labor pains had commenced. Examination by the rectum caused to be felt a soft mass pressing on the perineum, which appeared to be the foot of the child. By the use of a sound it was found that the little foramen that represented the vagina, extended to a depth of 6 centimeters toward the anus. The pains increased until there issued from the foramen a liquid consisting of amniotic fluid, meconium and blood. Chloroform was given, and the perineum was incised for a length of six centimeters from the foramen toward the anus. The fetus was delivered feet first easily, with some pressure at the nape of the neck when the head descended. The placenta and membranes were delivered at once, complete, and the uterus contracted. The fetus was dead. An attempt was made to form a shallow vagina by stitching together at the sides of the incision the mucous membrane and skin, but the constant flow of urine prevented healing. The patient was well in three weeks' time, and at

the end of three months presented a moderate degree of prolapsus uteri. It is interesting to note that impregnation took place where there was absolutely no vagina. The results of operative procedures in such cases are a prolapse of all the pelvic organs, which it is impossible to hold up either by surgical or by orthopedic means.

Partial Contractions of the Uterus and Errors of Diagnosis Caused by Them.—Paul Bar (*Bull. de la Soc. d'Obst. de Paris*, Feb. 16), calls attention to observations made by him that lead him to believe that during the latter part of pregnancy segments of the uterus contract, while other portions remain relaxed, so that the contracted portions appear like tumors. This contraction may persist throughout a single gynecological examination, while at the next one the contraction will be absent and the apparent tumor will have disappeared. When these contractions occur at the time of labor it appears that there is a tumor complicating the pregnancy. In a case observed by the author, in which one horn of the uterus was much developed, this contraction, occurring in the rest of the uterus, caused him to suspect a cystic tumor in the location of the uncontracted horn, a hydronephrosis, which at the next examination had entirely disappeared. There may also be difficulty in differentiating between such contracted portions of the uterus and pregnancy in one horn, extrauterine pregnancy, or a complicating myoma, during the latter months of pregnancy. These contractions may be very painful. They may be appreciated by palpation and by combined vaginal and abdominal examination. There may be semi-contraction or contraction of the upper or lower segment alone. The author calls attention to the fact that in animals that have a bicornuate uterus, one side of the uterus contracts, while the other side remains relaxed. The author saw at the Hôpital Saint-Antoine a case of uterus bicornis, in which the pregnant horn alone contracted.

Rupture of the Uterus.—Alfred V. Valenta (*Zent. für Gyn.*, March 4), sums up the results of 16 cases of rupture of the uterus which came to the hospital during six years, out of 1,350 cases of labor, treated there. There were 14 cases of total rupture, two of partial rupture, with 31.25 per cent. of recoveries, that is five cases. Rupture occurs generally in the practice of midwives, or in operative procedures improperly carried out. Of the total ruptures, eight cases were operated on, of which three recovered. Three were in extremis when brought in, and three refused operation. The best results are obtained when the operation is done as soon as possible after the rupture has occurred. In cases where long transportation was necessary the results were bad. All cases not operated on died. The general results would have been better had not operation been refused in some cases. In some cases it was necessary to tampon, when hemorrhage was severe while waiting for the preparations for operation, or to obtain consent, or to bring the patient to the hospital. The operation in five cases was supra-vaginal amputation, with extraperitoneal treatment of the stump.

The author prefers this operation to extirpation of the uterus by way of the abdomen, because he thinks it easier and quicker, as well as giving less danger of sepsis. The vagina is usually ruptured as well as the uterus, and the vaginal method permits treatment of the vaginal wound. In two cases the uterus was extirpated. The two partial ruptures recovered after suture of the wound.

GYNECOLOGY AND ABDOMINAL SURGERY.

Rapid Dilatation of the Cervical Canal and the Choice of Methods for the General Practitioner.—Stöckel (*Berl. Klin. Woch.*, March 13) discusses the methods of rapid dilatation of the uterus used in modern times. Rapid dilatation is now employed much more frequently than formerly. It was then resorted to only when there were serious dangers to life. The methods have been so much improved that it may now be used without difficulty or danger, and nature may thus be assisted much more frequently. Methods of dilatation fall naturally into two groups: dilatation without cutting of the tissues, and dilatation with the use of the knife on the cervix. In the first category belong Bossi's method, and dilatation by inflated rubber bags. To the second belong the radiating incisions of Dührssen and his vaginal Cesarean section. Of the radiating incisions it may be said that they result in severe hemorrhages, dangerous to life and difficult to control. Vaginal Cesarean section is neither difficult nor dangerous, but the indications for it are few. Bossi's dilator is a metallic instrument with four arms, placed close together when the instrument is introduced, and separated gradually by a mechanical device, the amount of dilatation accomplished being indicated by a scale. The instrument is not as yet fully adopted by the general practitioner, and has not as yet been thoroughly studied by gynecologists. Among those who have employed it there are great differences of opinion as to its value and the indications for its use. Leopold has reported very favorably upon its use in 80 cases. Ehrlich recommends using it only where there is danger to the life of mother or child. According to him eclampsia is the most important indication for its employment. Others are tetanus uteri, sepsis during labor, contracted pelvis, perhaps placenta previa. Dilatation is absolutely necessary for the application of the forceps, and version does not give as good results as forceps, the life of the child being often sacrificed, and ruptures more frequent. This instrument rarely causes rupture of the cervix. Hence it may be used preparatory to forceps. V. Bardeleben has had results of quite an opposite nature. He states that the uterine contractions do not succeed the dilatation in proportion to the amount of opening obtained; that cervical tears are easily produced and are frequent; that the method is not favorable to the child; that following its use most women suffer from metritis and other inflammations. The author has himself seen tears result, and severe hemorrhages produced. He thinks that more observations should be made by gynecologists before it comes into general use.

Torsion of Parovarian Cysts.—J. Vanverts (*Ann. de Gyn. et d'Obst.*, Feb.), explains that parovarian cysts are usually sessile, but that when they grow near the upper edge of the broad ligament, they may stretch the latter, and thus form a pedicle, which acts like that of an ordinary ovarian cyst. The author finds records of only 16 cases in literature. Twice the torsion occurred during pregnancy, probably due to the changes in the position of the pelvic organs. Once it took place after abortion at six months. The etiology is generally unknown. The pedicle consists of two layers of broad ligament vessels, the tube and sometimes the ovary. Hemorrhages, or gangrene may result. The symptoms begin with a crisis of severe pain in the abdomen, followed by vomiting, nausea, constipation, abdominal distention, and rise of pulse and temperature. There follows a disappearance of symptoms, and another crisis, due to a fresh twisting of the pedicle, or an increase of the torsion. The diagnosis is not easily made, and the condition may be mistaken for any other cause of pain in the abdomen. The only treatment is operative interference, with removal of the cyst.

Decrease of Gonorrhea Among the Prostitutes of Dorpat Since 1898.—C. Strohmberg (*St. Petersburger Med. Woch.*, Feb. 26), gives the results of his careful examination and treatment of all the prostitutes licensed in Dorpat from 1898 to the present time. The author has shown that from 1897 to 1899 the percentage of condylomatous syphilides was decreased from 33 per cent. to a minimum of from 21 to 26 per cent. He now shows that gonorrhea has also diminished. New regulations as to the control of prostitution have been made in Russia since 1903. Control of venereal disease can only be expected by investigation and regulation of its sources. The source he believes to be the mass of prostitutes, who carry infection from one to another, daily increasing the number of its victims. Only by careful physical and microscopical examination of all prostitutes can we expect to gain anything in our fight against venereal disease. The modern enlightenment as to sexual control, the proper teaching of the young, and the interest taken in convalescent homes for prostitutes, are all favorable signs. Yet there is much opposition to the methods of license and examination of these women. For the suppression of venereal disease we must have a knowledge by the patient, of her disease, a willingness to be treated, entire cure of the infectious stage, and avoidance of the means of infection of others. With these we may hope to lessen the number of cases. Isolation is manifestly impossible, and the disease is spread by the passing from one place to another of the women infected. Hence the only way to control the spread is by careful and systematic medical examination of the women. Some infected show no gonococci, yet have clinical symptoms of gonorrhea, and vice versa. A microscopic examination is necessary in order to make a certain diagnosis; but this takes a great deal of time when many prostitutes are to be examined. The author has adopted the fol-

lowing methods: A microscopical examination is made of the secretion of every new case, and upon every appearance of new symptoms, and every woman submits to an examination of secretion once in two months. The examiner becomes accustomed to his patients, and any new symptoms are at once perceived, and lead to microscopical examination. Hence it is not necessary to examine every case each day, and the time required is greatly diminished. He tabulates his results, showing that from 1898 to 1900, there were 22 to 28 per cent. of the prostitutes had gonorrhea; in 1901, 32 to 36 per cent.; in 1902, 24 to 25 per cent.; from 1903 to 1904, 16 to 19 per cent., thus demonstrating a marked decrease under his methods.

Peritoneal Suture After Vaginal Total Extirpation of the Uterus.—Schultze (*Monatsschr. f. Geb. u. Gyn.*, March), advocates the closure by suture of the peritoneum and vaginal vault after total extirpation of the uterus by way of the vagina. He cites many cases, operated on by many excellent surgeons, in which the patient has been lost by prolapse of the abdominal organs, when drainage by either gauze or rubber drainage tubes has been used. The dangers of drainage he gives thus: prolapse of omentum or of intestines, ileo-vaginal fistula, decubitus of intestines or bladder with adhesions, ascending infection, ileus. All these may be avoided by the author's method of suture, which he has used successfully in 56 cases. After unhappy experiences from drainage in hospital work, he adopted in his private practice the simple method of suturing the peritoneal surfaces in the anterior and posterior culs-de-sac and the stump, so as to make a complete closure of the vaginal vault. The serous surfaces are brought into contact, and the supravaginal space is much narrowed. Among the 56 cases there were only four deaths, three of them in cases of cancer, one of myoma after a recent pregnancy with much loss of blood. One died of pneumonia, two of pulmonary embolism, one of general sepsis; hence deaths were not due to faulty technique in the operation. No hemorrhages followed, and no re-opening was needed. The operation takes from half an hour to one hour.

Glycerinated Vaginal Tampons.—M. Sayanno (*La Presse Méd.*, Feb. 25) recites the results of the use of tampons soaked in glycerin and tigenol in cases of gonorrhea and leucorrhea. He believes that the number of bacilli is gradually diminished by the action of the water abstracted by the glycerin from the tissues, the germs being literally washed out by the discharge. The discharge soon becomes thin and less purulent, a contrast to the thick, greenish, odorous muco-purulent fluid at first excreted. Examination of smears taken from cases observed show the almost entire disappearance of gonococci and septic bacteria after a treatment of three months or less. The author also finds that the diseases of the adnexa are very favorably affected by the same treatment, inflammation disappearing and cure resulting in many cases without operation.

The Effect of Tubal Abscess upon the Position of the Ureter.—

Ernest Bayen Young (*Bost. Med. & Surg. Jour.*, Feb. 16) finds that small collections of pus in the Fallopian tubes do not displace the ureters. That large collections displace the ureters, (a) outward generally, whether the ureter is above or below the mass; (b) downward rarely, on to the posterior cul-de-sac.

That such displacements are probably due to, (a) traction upon the unfiltrated broad ligament by the distended tubes, the ureter moving with the broad ligament; (b) direct pressure from the growing abscess, forcing the ureter in the direction of the least resistance; (c) a combination of both.

Adrenalin in Gynecological and Obstetrical Work.—

De Seigneux (*La Presse Méd.*, March 15) describes an operation for colpoperineorrhaphy done by him with local use of tampons soaked in adrenalin solution, made by adding to 100 cubic centimeters of distilled water 20 drops of a one-per cent. solution of adrenalin. These tampons were placed over the cut tissues, and so blanched the cut surfaces that there was very slight loss of blood, and that the field operation was throughout clearly seen. There had been a complete rupture of the perineum into the rectum of four years' standing. The patient made a good recovery. There can be no danger in the use of adrenalin in this way, because the fluid is only superficially absorbed. He recommends the use of stronger solutions, strong enough to completely arrest hemorrhage, but not so strong as to prevent the finding litigation of the larger vessels, which might give rise to secondary hemorrhage. Cocaine may be mixed with the adrenalin solution, and thus the benefits of local anesthesia added to that of lessened hemorrhage. With this mixture many operations usually done under general anesthesia may be done with local anesthesia alone. The effect of the cocaine is enhanced, because the adrenalin contracts the vessels and prevents the cocaine from being carried away from the field operation, so that the effect lasts much longer with the same amount of cocaine. The danger of poisoning is also much less. The author thinks that this mixture may permit of the application of forceps in labor with the use of anesthesia, since the pain of introducing forceps is entirely in the perineum. It might also be used to lessen the sufferings of the last stage of labor, which are due to the stretching of the perineum, and thus we might avoid the use of chloroform in ordinary labors.

DISEASES OF CHILDREN.**Infantile Dysentery.—**

J. H. M. Knox (*Jour. Amer. Med. Assn.*, Dec. 17 and 24, 1904), in investigating clinically 43 cases of dysentery in which the bacillus dysenteriae of the acid-type was isolated, found the histories, clinical manifestations, and pathological lesions identical with those of ordinary epidemic diarrhea. These are included in Holt's report. Beginning in June, it reaches its height in July and gradually declines in August, occurring sporadically at other times. The number of cases appears to be

directly increased by extreme heat. Children under one year are most susceptible; those over three are rarely attacked. Most cases occur in infants artificially fed. Simultaneous outbreak of so many cases suggests that the bacillus reaches the children primarily through a carrier common to all, such as water, rather than through milk. Ill-nourished children, especially those fed on condensed milk, most often succumb. Cases may be divided into those with prominent symptoms of toxemia and those with evidence of a destructive bowel lesion. Mucus was found in the stools in all cases, blood in moderate amount in 42 per cent., pus in 53 per cent. The keynote in treatment is promptness. If food is stopped and the alimentary canal emptied within a few hours after onset of symptoms, most cases can be aborted. The use of antidyenteric serum was disappointing, but it is harmless and its value varies in proportion to the shortness of time before the injection. Prophylactic injection of the serum into susceptible babies may be advisable.

Bacillus Dysenteriae.—L. E. Holt (*Jour. Amer. Med. Assn.*, Dec. 25, 1904) presents a clinical study of 237 cases of infantile dysentery in which this bacillus was found, compiled from the published and unpublished reports of several investigators in New York, Boston, Philadelphia, and Baltimore. These showed that it occurs in breast-fed infants as well as in those artificially fed, and that it may occur as a mild intestinal disorder with few symptoms, with local symptoms of considerable severity yet little fever or constitutional disturbance, or with both local and constitutional symptoms very marked. As to locality, it varies only in that in the warmer cities the proportion of acute cases is larger. It occurs even in the best surroundings and in the country. In 207 cases the organism was of the "acid" or "Flexner-Harris" type, the true Shiga in 23, while both forms were found in 7. No difference in clinical manifestations was associated with these variations in form of infection. Of the 237 cases, 73 were fatal. The necessity of stopping milk during the acute attack is universally agreed upon. In cases of moderate severity where the infection seems to play a minor part, the diet should be managed on general principles, as in other forms of acute or sub-acute intestinal indigestion. The mere presence of the bacillus dysenteriae in the stools is in itself no reason for withholding milk. To prevent contagion the nurse who handles the napkins should have nothing to do with the food or feeding. Antidyenteric serum was used in 83 cases, 38 of which were fatal. In many of these it was employed only late, or in severe cases, and at first only in small doses, while 67 of the 83 were hospital patients. It should be used early, before serious lesions develop or strength is impaired, in repeated doses, once or twice a day for several days in severe cases, in doses of at least 10 c.c. daily in a moderate case. It is likely to be most efficient early in acute cases, as it should be given on a clinical diagnosis, without delaying the two days for a bacteriological examination. Since the type of infection cannot

be differentiated clinically, it would be wise to use a serum from animals immunized against both types of organism or against the acid-type, as most cases are of that variety.

Infantile Scurvy.—J. L. Morse (*Jour. Amer. Med. Assn.*, Dec. 17, 1904) records seven cases as showing that hematuria may be the earliest symptom of infantile scurvy, and therefore for a time the only symptom. Scurvy is the most common cause of uncomplicated hematuria in infancy.

Ateleiosis and Progeria.—Ateleiosis, or continuous youth, a condition of imperfect development, is well illustrated by four cases of Hastings Gilford (*Brit. Med. Jour.*, Oct. 8, 1904), which he contrasts with progeria or premature old age. In ateleiosis there are two varieties. In the asexual variety there is conspicuous delay of development of the whole body, some parts, especially the sexual organs, being affected more than others. In the sexual variety there is similar delayed development until puberty, when the sexual organs develop, fusion of epiphyses occurs and the person assumes indications of maturity while retaining the stature, proportions and physiognomy of childhood.

Conditions Mistaken for Meningitis.—Meningitis in children is divided, by E. P. Baumann (*Brit Jour. of Children's Diseases*, Feb.) into tuberculous, posterior-basic or simple, and purulent. He reports, as simulating meningitis, cases of typhoid, lobar and bronchopneumonia, influenza, mastoid disease, otitis media, sarcoma of the brain, renal disease, gastrointestinal disturbance, and pseudomeningitis. In making a diagnosis history alone is unreliable, physical signs are uncertain. Kernig's sign is of little diagnostic import, and if any stress is to be laid upon it, it must be looked for daily. Tache cérébrale is of still less value, for it is present in trivial disorders. Head retraction is of importance only when very pronounced. Pulse rate is important, since it usually follows the temperature in febrile diseases, so that slow pulse with high temperature suggests a cerebral lesion. The urine should be examined frequently to exclude uremia. Examination of the optic fundis is imperative. A negative result is of little diagnostic value, for posterior-basic meningitis usually runs its course without changes in the disc, and the same is not uncommon with tuberculous and septic meningitis. Choroidal tubercles should be looked for; but it is necessary to be sure that what is seen is really a tubercle. Squint and nystagmus are only confirmatory signs, as nystagmus occurs in other conditions, and strabismus may have been present previously. Inequality of the pupils is not infrequent in healthy children. Examination of the chest and abdomen for signs of tuberculosis or typhoid is necessary. Slight bronchitis often marks the onset of typhoid. The ears should be inspected in every case. Puncture of the drum may at once relieve cerebral symptoms even if no obvious aural disease exists. A Widal reaction should be sought for repeatedly if there is a swollen abdomen, enlarged spleen or other sugges-

tion of typhoid. A positive reaction does not exclude meningitis. Lumbar puncture yielding fluid with definite cloudiness or opacity signifies an inflammatory process, usually suppurative meningitis. In posterior-basic meningitis the fluid is generally clear, as it is in tuberculous meningitis or in the suppurative form if occlusion of the passages from the ventricles to the sub-arachnoid space occurs. Examinations of stained smears for bacteria and differential counts of leucocytes in the fluid are of value. In tuberculous meningitis there is usually an excess of mononuclear cells; in the suppurative form of polymorphonuclear; in posterior-basic meningitis a slight excess of polymorphonuclear over mononuclear. Bacteriological examination occasionally reveals the tubercle bacillus in tuberculous meningitis. In other forms the causative germ can often be cultivated. Blood examinations must not be neglected. A count of over 25,000 leucocytes strongly suggests a suppurative process, especially if the majority of the cells are polymorphonuclear. Trichinosis is excluded if the eosinophile cells are not increased.

Posterior-Basic Meningitis.—During the recent epidemic of cerebrospinal meningitis, eight cases of posterior-basic meningitis were admitted to the hospital service of Henry Koplik (*Amer. Jour. Med. Sci.*, Feb.). Only two of these were above two years of age. In the cases below this age the onset was sudden in all but one, with fever, vomiting, rigidity of the neck, and sometimes convulsions which might be repeated. When the disease was fully developed the children were emaciated, they lay quiet, seldom crying out; the head was retracted, there was marked or slight episthotonos, the upper and lower extremities were adducted, the forearm being flexed on the arm, the thighs on the abdomen, and the wrists and fingers flexed. In some cases the children presented the picture in the upper extremities seen in tetany, the so-called driving position of the hands. In others the lower extremities were extended and could not be bent, although the upper extremities would be strongly flexed. In the extended position of the lower extremities the thighs could not be flexed, nor could the lower extremity be flexed at the knee. The foot was strongly extended on the leg and the toes flexed into the plantar surface of the foot. The head was sometimes bent back at almost a right angle to the spinal cord. These spastic symptoms sometimes diminished, but would recur if the back were rubbed. The legs were crossed in some cases, in others there were purposeless movements of the hands in front of the face. Open fontanelles were bulging and sutures pressed open in some cases. Strabismus was sometimes present. In prolonged cases the temperature was not above normal until near the end. There was no optic neuritis in most cases. Lumbar puncture did not always obtain fluid. In prolonged cases with hydrocephalus it was of negative diagnostic value only, as the fluid was always sterile and the leucocytes absent chiefly mononuclear. Cases in older children do not resemble the above type, and may be complicated with pneumonia

or secondary to it. The characteristic symptoms are absent, but there may be such suggestive symptoms as facial or ocular paralysis. In the majority of children below two years of age attacked by cerebrospinal meningitis the symptomatology is identical with that described above.

Typhoidal Insanity in Childhood.—A search of the literature by David L. Edsall (*Amer. Jour. Med. Sci.*, Feb.) resulted in the compilation of 36 manias, 26 dementias, 6 melancholias, 14 instances of delirium of convalescence with simple delusions or hallucinations, and 1 chronic paranoia. Excluding the simple deliriums of convalescence there were 69 cases of which 43, or 62.3 per cent., recovered; 23, or 33.33 per cent., remained insane; 3, or 4.34 per cent., died. Of the manias, 29 recovered; 2, or 5.55 per cent., died, and in 5, or 13.89 per cent., insanity persisted. Of the dementias, 9 recovered, 1 died—apparently from erysipelas—and 16, or 61.61 per cent., remained demented. Of the 6 melancholias, 5 recovered and 1 remained subject to severe melancholia after many years. The figures for melancholia are too small to represent the facts properly. The writer believes that typhoidal insanity is much more common than the number of reported cases would indicate, and that mild cases are often overlooked, and so the prognosis is better than these figures state. These cases showed little history of hereditary insanity or severe nervous conditions. Dementias following typhoid are much more common than in adults. It has often been stated that mental derangements are much more common in the late years of childhood than earlier, but the statistics do not confirm this. Typhoidal insanity appears to be little, if at all, less common in children than in adults, though it is often much more difficult to determine when it is present in the former. Severe mental depression may be due to marked homesickness, longing for food, or other emotions that would be much less active in adults; but real insanity is very apt to be considered as a mere manifestation of peevishness, ill temper, etc. Early diagnosis is of real importance, as treatment is then most effective. The commonest form of insanity in these cases is mania, often with pronounced melancholia, and both these conditions are often associated with a pronounced confusional state. The types often overlap. The dementias show marked weakness of intellect, and are often dirty in their habits. In violent cases hospital treatment is necessary; but in mild cases, especially those that are improving, but depressed and homesick, the surroundings may increase the psychosis. These children are apt to do better at home.

Differential Diagnosis of the Mental Symptoms of Chorea.—L. Ruppel (*Münch. Med. Woch.*, March 7) gives the following as symptoms of the psychological side of the choreic state in severe cases: (a) Elementary psychic symptoms: excitement, irritability, peevishness, fearfulness, hallucinations of sight, terrible dreams; (b) slight delirium; (c) psychic exhaustion, shown by forgetfulness, wandering of mind, indifference, confusion, even

amounting to delirium from sleeplessness, marked movements, imperfect nutrition, fever; (d) true mental disease, the result of infections, complicating chorea, hallucinatory confusion, stupor or imbecility; (e) complicating psychoses from physical trauma. Wollenberg calls Sydenham's chorea an "infection form" and Huntington's chorea a "degenerative form." It is often difficult to distinguish the symptoms of the original choreic condition from those produced by the complications that ensue from the difficulty of feeding the patient, his inability to digest, and the other results of his unfortunate condition.

Vascular Pathology of Progressive Paralysis in a Baby.—Campana (*La Riforma Med.*, Feb. 15) reports the microscopical examination of the capillaries of the brain of a syphilitic child, who died as a result of accident in the early stages of what appeared to be progressive paralysis. The arteries of the brain showed perivascular infiltration. He has found the same results in other cases that he has examined, as well as in incipient tabes of syphilitic origin. He believes that examinations of such cases by many authors will result in an agreement of results, or at least that we shall arrive at an explanation of the differing results obtained by different pathologists. He therefore urges similar researches by others.

Congenital Trophic Edema.—Otto Grünbaum (*Brit. Jour. of Children's Diseases*, Dec., 1904) reports three cases said to be of this character. In none is the condition of the urine mentioned. Case 1. Male, 3 months old, symmetrical edema of the feet. Case 2. Female, 5 years of age, symmetrical edema of lower extremities from middle of thighs down, increased by the upright position; no thickening of the skin; no change in sensations of touch, pressure, heat, cold or pain. Blood examination showed only about 49 per cent. of polynuclear leucocytes and 6.5 per cent. of eosinophiles, but was normal otherwise. Case 3. Male, 6 months old, brother of preceding case. Symmetrical edema of legs and feet with cutaneous thickening. According to the writer, the following classes of cases have been described: (1) Congenital hereditary edema: (a) symmetrical, (b) asymmetrical; (2) trophic edema developing in later life; (3) persistent hereditary postural edema; (4) segmental edema; (5) scleroderma with edema.

Appendicitis Discovered by Rectal Examination.—As emphasizing the importance of routine rectal examination in all doubtful cases of illness in children, especially if symptoms point to the abdomen as the seat of disturbance, Dan McKenzie (*Brit. Jour. of Children's Diseases*, Dec., 1904) records the case of a child 4 years of age, suffering from pyrexia and malaise, and giving a history of periodical attacks of acute gastric disorder. The next day he complained of stomachache and pain on micturition, but physical examination was negative until bimanual rectal examination revealed a small oval tumor in the right iliac region. Operation showed an abscess surrounding an appendix with several perforations.

Intussusception.—In an analysis of 110 cases of intussusception occurring at the Children's Hospital, Melbourne, F. H. Cole (*Intercol. Med. Jour. of Australasia*, Dec. 20, 1904) found that 90 per cent. of the cases were under one year of age. The chief predisposing cause seems to be congenital anomalies of the mesentery, in the ileo-cecal variety a long mesentery of the ascending colon. The diagnosis is made by sudden onset, paroxysmal pain, vomiting, bloody discharges, absence of feces, and presence of a tumor detected by combined abdominal and rectal examination. Purgatives are inadmissible. Attempts to reduce by inflation of the colon with water should be used only in cases of not more than six hours' duration. Irrigation should be done slowly, thoroughly and carefully under anesthesia, and not repeated. Immediate laparotomy is indicated if there is doubt as to the disappearance of the tumor, if recurrence takes place after irrigation, or if more than six hours have elapsed since intussusception took place. The writer's statistics show a mortality of 52 per cent. after laparotomy, but many cases were in extremis after prolonged trial of other methods. When not more than 48 hours had elapsed since the onset the mortality was 27.5 per cent.; if within the first 24 hours, 83 per cent. recovered.

Results of Bloodless Reduction of Congenital Dislocation of the Hip Joint.—Georg Joachimsthal (*Berl. Klin. Woch.*, Feb. 27) sums up the results of this operation in his work. The first matter of importance is the reposition of the bone in the socket, which is done by a combination of traction with abduction and adduction, and movements like the handle of a pump, forcing the head of the bone over the border of the acetabulum. This is done entirely by manual force. The second important procedure is the retention of the bone in place. This is done by a plaster-of-Paris bandage from the pelvis to the knee, in which the patient soon begins to walk. The author advocates the shortest possible period of fixation, not over three months, unless dislocation recurs. Soon after a reposition the Röntgen ray shows the changes in the articulation. The acetabulum is shallower than in the normal joint. The contours, in comparison with the normal half of the pelvis, are less sharp, irregular, and show the formation of osteophytes. The epiphysis of the femur, as well as that of the trochanter, shows the results of delayed ossification. The shaft of the femur is thinner than normal. These x-ray examinations are of the greatest value. In the youngest children the function returns much more quickly after removal of the bandage than in those who are older. In a young case in which the bandage was removed after two months the function of the stiffened joint had become good in eight days. Of twelve children operated on from two years to eight years ago, all have perfect gait, without any lordosis, and walk with an even pelvis.

Enuresis.—M. Ostheimer and I. V. Levi (*Jour. A. M. A.*, Dec. 17, 1904) give the results of the following routine treatment in 90 cases of enuresis. Tea, coffee, fresh bread and cake and fried

food were forbidden, no food except milk allowed between meals, fluid at supper limited to one glassful and none later; cold sponge bath and rubbing every morning; correction of gastrointestinal or nasopharyngeal catarrh, otitis, tonsillitis, eczema, worms, etc.; potassium citrate if urine hyperacid; freeing of preputial adhesions. Tincture of belladonna was given in ascending drop doses, beginning with three drops three times daily, increasing a drop a day, and a bitter alkaline before meals. If 10 to 15 drops failed to control enuresis, aromatic tincture of rhus, increasing gradually to 30 minims a day, was tried. This failing, a solution of atropine gr. 1/240 and strychnine gr. 1/480 to the drop was given, beginning with one drop one to three times a day and increasing one drop a day until symptoms of physiological action of one of the drugs appeared or enuresis ceased. Of the 90 cases, 67 were cured; 37 after giving tincture of belladonna; 22 after the atropine-strychnine mixture; 2 with diet and hygiene alone; the rest by various remedies. Nine were improved, of whom 5 took tincture of belladonna, 2 the atropine-strychnine mixture. The average duration of treatment in the cases cured was 5½ weeks. There was recurrence in 17 of the 67 cases, generally on the first cool nights or after ingestion of much fluid; but they yielded within a few days to renewed treatment.

Results of Treatment of Scrofulo-tuberculous Affections in Children in the Marine Hospital at San Pelagio.—Kien (*Wiener Allgem. Med. Zeitschr.* No. 46-47) gives the results of treatment at this hospital of 58 cases which were completely cured. They include affections of nearly all the joints of the body by tubercular disease. The hospital is situated at the seaside, protected from northern winds, and amidst sub-tropical vegetation. The children are treated in the open air, take sea baths and a nourishing diet, together with tonic medicines. In the early stages, when the joints are slightly swollen and painful, they are immobilized and cold is applied locally. In acute attacks and empyema of joints the articulations are punctured and iodoform emulsion injected, or the opening is enlarged and the pyogenic membrane scraped out. Fistulous tracts are opened, the diseased portions removed, or in a few cases cauterized with the Paquelin. When there is great destruction of the articulations, resection is practiced, whenever it is possible to preserve the articulation. To correct contractures, stretching and brisement forc  are made use of, with care not to injure nerves or vessels. Simple lymphomata generally yield easily to treatment; if they do not they are extirpated.

Acute Coryza in Babies.—Massei (*Gazetta Med. di Roma*, Jan.) tells us that nasal catarrh in infants and young children is of relatively great importance, so that it becomes worthy of special mention. There are many etiological factors; ease of taking cold in young infants, combined with the various germs that may aid this factor, such as the pneumococcus, pneumobacillus, streptococcus, straphylococcus, gonococcus, etc. The suppression of nasal respiration is of grave importance in an infant, which may

be very poorly nourished from inability to nurse. Cyanosis, convulsions, gradual failure of weight, marasmus, with bronchopneumonia and other complications, may end in death. A differential diagnosis from hereditary syphilis and acute stenosis of the larynx must be made. If coryza occurs at birth, one should think of a gonorrheal inflammation, or a congenital occlusion of the nostrils, either bony or by adenoid tissue. Treatment is not easy. The author recommends glyceroles, insufflation of orthoform, menthol instead of cocaine, or boric acid subnitrate of bismuth and resorcin by insufflation. The child should be fed with a spoon, or even by gavage.

Ozonotherapy and Blood Changes in Pertussis.—A. Muggia and M. Bertolotti (*Rivista di Clin. Ped.*, Feb.) give the results of the use of ozone, generated by electricity, in 35 cases of pertussis, which they found to be very encouraging. The ozone acts as a marked antispasmodic, instead of an antitoxic or antimicrobial, and seems to have almost a specific action against the spasmodic cough. After one sitting each day for from ten to twenty days the cough is no longer spasmodic. As to the blood formula, there is a leucocytosis in pertussis, but it is the large, mononuclear elements that are increased, while the polynuclear cells and the lymphocytes are diminished; thus there is a true inversion of the leucocyte formula, which the authors believe to be the result of the attempt of the system to resist the poison. Pertussis results in a more or less permanent immunity, which is due to the increase of the mononuclear leucocytes, and this inversion is not affected by the ozone. Hence ozone acts merely as an antispasmodic. There is also an increase of red blood corpuscles and of hemoglobin. The same authors have performed lumbar puncture in three cases of pertussis with the result of producing a remission of the convulsive seizures. Grave complications of the nervous system sometimes follow the spasmodic cough. The examination of the cephalospinal fluid has thrown some new light on the cause of these symptoms. In three cases with fever, bradycardia, vomiting and slight inequality of the pupils there was a marked hypertension of the cerebrospinal fluid, and an evident mononucleosis. The blood also showed an increase of mononuclear leucocytes. It is to be noted that the lumbar puncture was absolutely harmless to the children, the median puncture being used between the third and fourth lumbar vertebrae.

Sudden and Unexpected Death in Children.—Giving this title the interpretation of "unexpectedly sudden death," A. H. Tubby (*Brit. Jour. of Children's Diseases*, Feb.) discusses it under the following headings: 1. Circulatory Conditions: (a) Abnormal blood conditions, such as hemorrhages due to congenital syphilis, hemophilia neonatorum, true hemophilia, pyemic infection of the stump of the umbilical cord, or persistent hemorrhage from the cord or intestine associated with jaundice due to congenital stricture or obliteration of the bile-ducts. In infantile scurvy the extent of the hemorrhage or its location in such a situation as the

brain may cause death. (b) Spontaneous hemorrhage includes, besides the above, bleeding from gastric or duodenal ulcer, tuberculous ulcers of the jejunum, and in older children that due to sloughing of the pharynx and tonsils as a complication of severe scarlet fever or due to noma. (c) Post-operative hemorrhage is regarded by the writer as a preventable cause of death due, in some cases, to an attempt at brilliancy in operation with lack of thoroughness. (d) Thrombosis and embolism may occur during injection of *nævi* or during electrolysis, or in acute intraabdominal inflammations.

2. Shock may be due to (a) cold, exposure, and undue delay in operating; (b) emptying cavities filled with fluid too rapidly; (c) washing out cavities. The writer dwells particularly upon the danger of irrigation of the pleural cavity, and cites his own experiments upon dogs. These showed that while sterilized salt solution produced little unfavorable effect, and sterile water and boracic acid solution slightly more, the use of even a small amount of tincture of iodine in the irrigating fluid might cause sudden death, and a 1-40 solution of carbolic acid acted as rapidly as hydrocyanic acid.

3. Toxic Conditions include (a) chemical poisons and irritants. Carbolic acid should never be used as a wet dressing for children. Its local application may cause erythema, vesication, sloughing of the skin of gangrene, or absorption through the delicate skin, result in poisoning. Some infants are very susceptible to iodoform, and fatal results have followed its absorption from the bladder. (b) Toxic poisoning includes certain cases of unexpectedly sudden death occurring several days after operations for appendicitis. Several cases are reported, in all of which the patients were doing well and suddenly fell dead. The writer regards these cases as due to development of a poison of active nature and cumulative effect, and makes no mention of the possibility of embolism. Uremia may result in unexpected death after operations otherwise safe.

4. Infective Conditions. These include development of acute tuberculosis or tuberculous meningitis within a few days after operations upon tuberculous adenitis or bone lesions. Tetanus in the new-born, due to umbilical infection, is now rare. Angina Ludovici and acute malignant edema, especially after fractures, are causes of sudden death. Pyemia in children is often rapidly fatal. The writer has seen a death within 48 hours following acute necrosis of bone. Umbilical arteritis, lithotomy and litholvisy operations are other causes of pyemia. Infection may occur after even a simple operation, as in one cited, in which an operation for adenoids was followed by cervical cellulitis and double empyema.

5. Mechanical Conditions include entrance of foreign bodies into the air passages, sudden obstruction by large papillomata of the larynx, pressure upon the trachea or bronchi of tuberculous lymph nodes, bursting of a caseous node into these structures, large thyroid, persistent thymus, and asphyxia such as occurred in a child whose hands had been tied to prevent handling a wound, and who was found dead, lying with face downward buried in the pillow.

6. Conditions referable to the nervous system include cerebral hemorrhage during labor or from hemophilia, rupture of a cerebral abscess into the lateral ventricles or of a cerebellar abscess; sudden escape of cerebrospinal fluid due to opening lateral ventricle in dressing a brain abscess or due to accidental incision of a spina bifida underlying a nævus. 7. Rare Causes are: Aspiration of air into the veins during operations for cervical adenitis, acute peritonitis from inflammation of an undescended testis, gonorrheal salpingitis, and sudden suppuration and rupture of a dermoid cyst.

Child Life Insurance.—An editorial (*Brit. Jour. of Children's Diseases*, Feb.) calls attention to the recent passage in France of a law prohibiting the insurance of the lives of children under twelve years of age, and approves of the action. Insurance money may prove a strong temptation to unscrupulous parents, who can easily cause death by improper feeding. If insurance is carried the contingency of funeral expenses might better be met by providing for the payment of these charges directly by the company. Apart from this there is no necessity for insurance, as the child has no one dependent upon it, and no one loses financially by its death. The advisability of such legal restriction in this country may well be considered.

Time When Soluble Ferments Appear in the Mother, and Their Significance in the Feeding of the Child.—Alessandro Bertino (*Annali di Ost. e Gin.*, Feb.) sums up experiments made with the milk of a woman from a few hours after confinement to the end of lactation, as to the presence of the various milk ferments. The milk was obtained from the mother by the use of the hand alone, that and the breast having been sterilized, as well as the flasks to contain the milk. In his summing up he states that from the first hour after birth there are present in the milk four classes of ferments—pepsin and trypsin; salol ferment, amylase, lipase; oxydase, and the glycolytic. There was no difference in the energy of these ferments at different periods of lactation. The colostrum also contains all these ferments. They remain in the milk even when lactation is about to cease. They were found to be present in two cases in which the lactation had been stopped on account of the milk exciting dyspeptic troubles in the children. These ferments are of the greatest value to the alimentation of the infant. They are not affected by the addition to the milk of oxygenated water or formaldehyde solutions.

Absorption of True Proteids in the Gastro-enteric Canal of Babies and Young Animals.—Ganghofner and Langer (*Munch. Med. Woch.*, No. 34, 1904) introduced proteids by way of the stomach and examined the blood serum for a specific precipitate with the homologous immune serum. They sum up as follows: 1. A heterogeneous albumin introduced into the stomach of a new-born animal is partly absorbed unaltered. This goes on up to the end of the first week; at the end of that time this ceases. 2. The same results are obtained in babies. 3. The gastro-

intestinal canal of adults does not permit of the passage of albumin into the blood from the stomach unchanged. 4. The absorption of albumin unaltered produces a formation of antibodies. The feeding with albuminoids in this way usually results in the death of the animals through the reaction of the organism against them.

Natural and Experimental Glycemia in Mother and Fetus.—C. Merlotti (*La Riforma Med.*, March 11) sums up his experimental work. The calculations were made from examination of the blood of mother and fetus during life. The blood of the mother contains from two to four times as much sugar as that of the fetus. Either the material sugar does not pass into the fetal blood, but is arrested and transformed at the level of the placenta, or it passes and is destroyed after reaching the fetal circulation. The last hypothesis is not probable, since the transformations are less active in the fetus than in the adult, and in the laboratory the glycolytic action of the blood of the fetus is less than that of the mother. The placenta, then, must regulate the passage of the maternal sugar into the fetal blood, moderating it, or partially transforming it. Hyperglycemia may be artificially produced in the mother, but this does not result in a proportionate increase in sugar in the fetal blood. The fetal blood is poor in saccharifying diastase, while it is abundant in the mother's blood. The placenta acts as a barrier to arrest the hemodiastatic ferment. The author believes that up to the time of a labor the placenta does not lose its power to change the sugar as it passes to the fetus, which is marked in the early stages of pregnancy.

Modifications of the Hemo-leucocyte Formula in Babies by Injections of Iodo-iodurate.—A. Gianasso (*Rivista di Clin. Ped.*, Feb.) gives a résumé of the results obtained by the hypodermatic injection of a solution of iodo-iodurate in 23 cases of osteo-articular, lymphatic and pulmonary tuberculosis in babies. These injections appear to have a local effect on the tubercular process, and excite the lymphatic activity over the entire body. They produce constantly a hyperleucocytosis, with a predominance of mononucleated bodies. This represents a reaction of the system to counteract the tubercular disease by means of the phagocytic action of these leucocytes. This has a direct effect on the bacilli, preventing their diffusion and neutralizing the action of their toxins.

Morphology of the Diphtheria and Pseudo-diphtheria Bacilli.—E. Saul (*Münch. Med. Woch.*, March 7) gives the results of his experiments on the morphology of the diphtheria and pseudo-diphtheria bacilli. After it had been shown that the study of the infection itself was not a sufficient means of differential diagnosis between the Klebs-Löffler and the pseudo-diphtheria bacilli, that the pathogenesis of the Klebs-Löffler bacillus in animals differs widely from that in man, and is not even parallel with it, and that the chemical reaction of the cultures and methods of staining do not give constant results, an attempt was made to use the specific serum reaction which has served to diagnose cholera for the

identification of the Klebs-Löffler bacillus. The agglutination reaction was declared by some to be a good means of diagnosis between true and false diphtheria bacilli, while by others it was found unsuccessful. The author then began the study of morphology and its relations to diagnosis. A true diphtheria culture was compared, as to its characteristics, with several pseudo-bacillus cultures obtained from various laboratories. These were from a purulent cholecystitis and the throat of a healthy child who had never had diphtheria. Two of the pseudo-diphtheria bacilli were differentiated by the use of the serum reaction, while the third acted like a true Klebs-Löffler bacillus. In the last case the bacillus was short, thick, with acid reaction in bouillon culture, stained with Neisser's stain, and caused only local infiltration in guinea pigs. The morphology of the different pseudo-bacilli was so different as to indicate that they were of different species. In comparing the morphology of the diphtheria bacilli with that of the pseudo-bacillus from cholecystitis, placing side by side cultures of the same age, he found marked differences in the shapes and thickness of the colonies and in their methods of branching.

Parasites of Varicella, Smallpox and Vaccinia.—W. E. de Korté (*Practitioner*, Jan.) has found it possible to demonstrate in the lymph collected from the pocks of these diseases spherical unicellular organisms about one twenty-five-hundredth of an inch in diameter, with a large centrally placed nucleus. These are found in hanging-drop preparations, but disappear when placed in culture media or when fixation is attempted. They may be fixed with alcohol and ether and then stained. That they are not leucocytes is further shown by the fact that they can be kept in sterile capillary tubes for six months without disintegration. The lymph from the vesicles of smallpox must be obtained by the fifth day of the eruption; human vaccine lymph on the eighth or ninth day, as they disappear on the tenth; while the parasite of chicken-pox is found during the first three days of the eruption and shares with that of human vaccine lymph the property of extreme motility.

Addition of Sodium Bicarbonate to an Infant's Food.—Godfrey R. Pisek (*Arch. of Pediatrics*, Nov., 1904), greatly doubts the expediency of this procedure as a routine measure. Many of the text-books, he states, advise the addition of two grains of bicarbonate of soda to each ounce of the infant's food, or one grain for an older child. One taking 20 ounces of food would receive 40 grains of bicarbonate of soda, or two and a half times as much as would be required to neutralize it if the milk was sour. Forty grains of soda would require about 20 ounces of gastric juice of an adult for its neutralization before any gastric digestion could take place, and as infants' gastric juice is less acid than that of adults, it would actually require an even greater quantity.

Congenital Lesions of the Diaphragm and Respiratory Insufficiency in the New-born.—Ambrogio Mori (*Annali di Ost. e Gin*, Oct., 1904), gives a very complete dissertation on hernia of

the diaphragm and its possible causes. This lesion is far from uncommon, and our author has collected a considerable number of cases, to which he adds one seen by himself at the Obstetrical Gynecological Clinic of Florence. This is a congenital lesion, usually resulting in death from insufficient respiratory power. It consists of an opening in the diaphragm, through which may protrude into the thoracic cavity any of the abdominal organs, compressing and displacing the thoracic organs. A few cases have lived for some time, showing symptoms of four kinds: dyspnea from pressure, displacement and atrophy of thoracic organs; dyspeptic symptoms due to transposition of the organs of digestion; obstruction from the same cause; tetanic and convulsive phenomena. The liver is often very much over-developed, and partially fills the thorax, and the heart is often transposed. There may be found interstitial hepatitis, indicating syphilitic infection from the mother. The cause of this condition is involved in some uncertainty. One theory depends on a lack of union of the anatomical elements: another on injuries to the abdomen of the mother in early pregnancy. The author believes that one of the main factors is an over-development of the liver, that organ then pushing the others out of place, and passing through the weak points of the diaphragm, formed by its various openings and the tendinous portion. He believes that this condition is not a simple monstrosity, from arrest of development, of remote embryonal period, but a true lesion of the diaphragm, secondary to increased abdominal pressure, arising first of all from an overgrowth of the liver, due to alterations in the circulation and in the parenchyma of the liver. As a predisposing cause he gives congenital variability of resistance of the diaphragm. The hernial sac may or may not exist.

Thrombosis and Embolism in the Puerperium.—Special attention is called by A. Richter (*Archiv f. Gyn.*, Bd. 74) to Mahler's sign. It is of value on account of its constancy and its early appearance. It is frequently the only danger signal in an otherwise apparently normal puerperium. Mahler explains the "Klettersymptom," as he calls it, as being due to the extra work necessary for the heart to perform in opening up the collateral circulation when a vein has been closed by a thrombus. The heart of a puerperal woman is generally or always in a condition of slight degeneration, and the extra work called for can only be performed by an increase in the number of contractions. The acme of the process is represented by the greatest pulse frequency. The material from which Richter drew his deductions amounted to about 16,000 cases. Among these 78 patients with thrombosis and 20 with embolism. Of the latter 60 per cent. proved fatal. In the above cases Mahler's sign was found distinctly positive in 63 per cent., and in 34 per cent. it was questionably positive on account of a previous elevation of temperature. In only 2 per cent. was it negative. The great value of the sign is that it is the only early indication of trouble, and demands prophylactic measures.

THE AMERICAN
JOURNAL OF OBSTETRICS
AND
DISEASES OF WOMEN AND CHILDREN.

VOL. LI.

JUNE, 1905.

NO. 6.

ORIGINAL COMMUNICATIONS.

**CERTAIN DETAILS REGARDING THE OPERATION OF
CESAREAN SECTION IN CASES OF CON-
TRACTED PELVIS BASED UPON A SERIES
OF THIRTY CASES.***

BY

J. M. MUNRO KERR,

Obstetric Physician, Glasgow Maternity Hospital.

IN bringing forward this subject of Cesarean section in contracted pelvis to-night my purpose is not to describe each case of the series of thirty upon which I have operated since my appointment to the Glasgow Maternity Hospital, three and a half years ago, but rather to consider certain details of the operation regarding which there are still differences of opinion amongst obstetricians.

The first matter upon which I wish to touch is the mortality and morbidity from the operation. This subject was gone into very fully by Galabin, at the Annual Meeting of the British Medical Association, in Manchester in 1902, and I think, on the whole, most of us were disappointed that on his showing the results of the operation in England were not better. Harris (and so far as I

*Read at a meeting of the London Obstetrical Society, Oct. 5, 1904.

know there are no later statistics than his) gave the English mortality in 1894 as 32 per cent. Since then it has fallen, of course, far below that. My own cases, as I have said, number 30,* with two deaths, a mortality of 6.6 per cent. Williams, in his recent textbook, states that in 335 operations performed by Chrobak, Schauta, Leopold, Braun, Olshausen, Zweifel, Reynolds, Bar, Charles, and Chagrin, there were only 23 deaths, a gross mortality of 6.8 per cent., a percentage practically the same as mine. Olshausen's latest figures, published last year (1882-1902) are 62 cases, with a mortality of 8 per cent.

As already mentioned, I have had two fatal cases. One was most unfortunate, for it might have been avoided. The patient (Case 12), some eight hours after the operation, showed signs of great collapse. Unfortunately, I could not get to see her, as I was engaged with an eclamptic to whom I had been called in consultation. One of the staff, however, saw her, but did not consider the collapse due to internal hemorrhage, and naturally did not open up the abdominal wound. At the post-mortem examination about 20 ounces of blood were found in the abdominal cavity, and two or three of the catgut uterine sutures were untied. I doubtless cut the sutures too short, and with the alternate contractions and relaxations of the uterus, they must have worked loose.

In the other fatal case (Case 11) death resulted from septicemia. The patient had been in hospital only a few hours before operation. If you look at the temperature chart you will see that there was no fever. The only symptoms were intestinal paralysis and rapid pulse. At the post-mortem examination there was general peritonitis, and the infection had evidently extended from the uterus.

But although there was only a mortality of 3.7 per cent. attributable to septic disturbances, one or two patients gave me considerable anxiety. Case 5, who had double mitral disease, suffered greatly from bronchitis and dyspnea for some days after the operation; Case 29 had pleuropneumonia; Cases 3 and 18 had marked fetor of lochia, with fever and rapid pulse and in consequence were given intrauterine douches, and Case 25 had double parotitis. In Case 23 I made deep incisions into the cellular tissue, behind and to the right side of the uterus. As she is the patient above all others whose recovery gave me the greatest satisfaction, I may briefly give the history of it. Mrs. McC., a primipara

*They now number 32 with two deaths, a mortality of 6.2 per cent.

with a generally contracted, flat rachitic pelvis (C. D. $3\frac{1}{4}$ inches), was admitted to the Maternity Hospital with the os fully dilated and the cord prolapsed, but pulsating. I delivered a live child by Cesarean section, and afterwards amputated the uterus, treating the stump retroperitoneally. She remained very well for the first three days, but after that she developed a high temperature, rapid pulse, and tympanitis. So ill was she, that on the ninth day I considered her condition quite hopeless. As, however, there seemed to be some fulness behind and to the right side of the cervix, I made deep incisions into the cellular tissue, but without finding any pus. Within twenty-four hours, however, a free purulent discharge appeared. The patient made steady improvement from that time, and she and her baby left the hospital perfectly well.

If one takes morbidity as represented by a temperature of 100.5 or over on more than one occasion, I find eight cases in which such a state of matters existed; that is to say, there was a morbidity of 26.6 per cent. Four of the cases had been in hospital and were carefully prepared before operation, but four were operated upon immediately after, or very shortly after admission. Theoretically, if the preparations for operation are perfect, no patient should become septic who has been in hospital for any time before operation. But the vagina is a very difficult canal to cleanse, and there is not the least doubt that it contains, in a considerable number of cases, organisms of a very virulent character. I say this with full knowledge of the most valuable investigations on the bacteriology of the vagina made by Doederlein, Menge, and others. Leopold has emphasized the great danger of gonococci. I was recently very much struck with the virulence of this organism in the puerperium in the case of a young woman who had a simple and spontaneous delivery of child and placenta; indeed, she was never examined vaginally, but who developed so grave a septicemia that she died. In the discharge taken from vagina and uterus pure cultures of gonococci were found.

In all my cases, therefore, I wash out the vagina very carefully, and in most of them I do the cleansing and douching myself immediately before operating. Naturally, I again disinfect my hands after doing so.

The second matter I wish to discuss is the treatment of the uterus after the child has been removed. There are three different courses open to one after extracting the child: (1) Removal of the uterus by Porro's operation or supravaginal hysterectomy,

with intra or retroperitoneal treatment of the stump. (2) Retention of the uterus, but sterilization of the patient by resection of the tubes. (3) Retention of the uterus without sterilization—the true conservative Cesarean section.

Each of these methods has its advantages. Not to go further than our own country, one finds Duncan, Routh, and Targett advocating the first; Cameron and Horrocks the second; Galabin, Sinclair, Spencer, and Wallace the third. With such differences of opinion among leading obstetricians, it is pretty safe to conclude that the truth rests not with one individual or one group.

(1) *Removal of the uterus by Porro's operation, or by supra-vaginal hysterectomy, with intra or retroperitoneal treatment of the stump.* Everyone admits that Porro's operation, for some years after its introduction, gave the best results. It fell out of use, however, more especially in England, after Kehrer, Sānger, and Cameron described their methods of stitching the uterus. Removing the uterus has always been much favored by Continental operators, and is still extensively employed, although not as Porro described it, for most surgeons now treat the stump intra or retroperitoneally.

What is the position of the matter in Great Britain? At present you have Cameron protesting, as he did at the Manchester meeting of the British Medical Association in 1902, "against the appalling frequency of hysterectomy along with Cesarean section as advocated by some members of the London Obstetrical Society." While on the other hand, you have Duncan reported as saying, at the July meeting of the Obstetrical Society in 1900, "that abdominal hysterectomy, with intraperitoneal treatment of the stump, was much less dangerous than any Cesarean section." There you have two absolutely different views, and the question to decide is, which of the two is correct. Taking my own results first, I find 23 cases with retention of uterus and 2 deaths, a mortality of 9.8, and 7 cases of hysterectomy with retroperitoneal treatment of stump, with no deaths. Looking at the morbidity, I find with the former it is 28 per cent., with the latter 25 per cent. Further, an examination shows that the hysterectomy cases were complicated, just the cases one would have expected might have had a fatal termination. In three there were extensive adhesions, in two probable infection before admission. From my own cases, therefore, I cannot but come to the conclusion that hysterectomy is in a great many cases the safer operation. Leopold, in his report of 100 cases, gives his total mortality with the conservative

operation as 9.8 per cent., and after hysterectomy as 10.3 per cent., but his reduced mortality as 5.8 per cent. in the former, and 3.7 per cent. in the latter. Von Braun Fernwald in 74 cases gives his mortality as 11.8 per cent. and 5 per cent. respectively. The latter author says the smallest mortality occurred in the operations where the uterus was removed. He considers it, therefore, the safer method. If you take 268 cases reported by Leopold, Braun, Schauta and Kerr, the conservative operation gives a gross mortality of 10 per cent., and hysterectomy a mortality of 8 per cent. Routh's and Duncan's claim, therefore, that hysterectomy is safer than the conservative operation must, I think, be admitted. The error they made, and more especially in this case with Duncan, was the advocating of the routine performance of hysterectomy.

The reason why hysterectomy gives the best results is because one has so often to operate on patients hurriedly prepared, and indeed not infrequently infected before admission to hospital. Should conditions improve, however, should our patients come to us or be sent to us earlier, as we hope will be the case in the future, we shall be able more and more to give up hysterectomy and have recourse to the ideal operation of conservative Cesarean section. At the present time and with our present knowledge we are only justified in doing this in certain cases.

(2) *Retention of the uterus and sterilization by resection of the tubes.* This method has its chief supporters in this country in Cameron and Horrocks. It has this advantage that it is an easier operation than hysterectomy with intra or retroperitoneal treatment of the stump. (It is not easier and certainly is slower than Porro's operation, but the latter has in this country been very largely given up.) It is an operation specially suited to practitioners who have not had experience of abdominal surgery. We would therefore recommend it to those who are suddenly called upon to perform the operation of Cæsarian section in out of the way country districts and without efficient assistants. In hospital practice, on the other hand, if the patient is to be sterilized, it is in most cases better to remove the uterus. There is, however, one reason which I think might justify sterilization by cutting and tying the tubes, and it is this, that if at a future date the woman wished to have the chance of another pregnancy one might perform abdominal section and unite the two ends of the divided tubes together again. Here are two cases in illustration. A patient who had been sterilized as described came to me in great distress be-

cause her child had died. I told her I could do nothing for her, but it occurred to me afterwards that I might have suggested the procedure I have mentioned. Some months later I did suggest the procedure to another patient who had been sterilized after a craniotomy by a colleague, but she would not submit to the operation. Now such a procedure is quite feasible, provided one simply cuts and ties the tubes, for the tubes remain patent after tying and cutting, as I have seen in two cases in which the abdomen was opened on a subsequent occasion. (That is the reason why one can never be sure of sterilizing an individual by such treatment. It is, however, so rarely that pregnancy follows that one may consider it a satisfactory method.) If, however, one cuts the tubes and covers over the uterine ends with peritoneum, then the operation of anastomosis would be more difficult.

Retention of the uterus without sterilization—the true conservative Cesarean section. This is the ideal operation; it is the operation which, as far as one can judge at present, will come more and more into vogue, and it is no small satisfaction to have amongst the Fellows of our Society two of the pioneers of this method, viz., Sinclair and Spencer. The latter has for many years been speaking against sterilization.

With regard to the sterilizing of patients after Cesarean section, there are three matters for consideration: (1) The ethical question. (2) The danger to the patient of the repetition of the operation. (3) The danger of rupture of the uterus in a subsequent pregnancy.

I must admit to being rather diffident about discussing the matter of sterilization from the ethical standpoint; it is indeed a very subtle subject, although one which might quite profitably be considered this evening. It is not quite correct, as some enthusiasts for the conservative operation have done, to place sterilization in the same category with, say, the repeated performance of craniotomy, or abortion, for in each of these operations one actually destroys a living fetus. It is much more on a par with the practice of those who give advice regarding the means to be used to prevent conception to patients suffering from some organic disease. All of us refuse to give advice unless we are convinced that pregnancy will seriously injure the patient's health or unduly endanger her life. If, however, a young married woman, say with serious chronic heart disease, consults us, we caution her against becoming pregnant; we tell her and her husband that there should be no sexual intercourse. From the ethical standpoint we should say no

more, but we know it is seldom that such advice is followed, and so we inform such patients of the preventatives to pregnancy which may be employed. Some may say we are not justified in doing so, but I would only ask these men if they would refuse to empty the uterus should such a patient's circulation become seriously embarrassed by a pregnancy. Now the position of a man who gives advice regarding preventative means to pregnancy in serious heart cases and the position of him who advocates and practices the sterilization of the patient after Cesarean section is very similar, and I think each is perfectly justified in taking up the positions he does.

A most interesting discussion on this question is reported in the Transactions of the American Gynecological Society for last year (Vol. 28, 1903). It followed the reading of a paper by Green on "Repetition of Cesarean Section on the Same Patient; the Experience of the Boston Lying-in Hospital." Green took up a very strong position; the following are the words with which he closed his paper: "I venture to assert that the only safe and moral ground for the medical profession is that based on modern medical science, uninfluenced by sociological considerations. If a woman comes to Cesarean section and recovers, she and her husband, if she has one, should be informed of her condition and of the prognosis and treatment in the event of future pregnancy; if subsequent pregnancy ensues, the responsibility of treatment rests with the obstetric surgeon, but the responsibility for the condition rests elsewhere." Whitridge Williams distinguished between "pauper patients" and "women in the upper walks of life." As regards the latter, he is reported to have said: "I do not believe we are justified in allowing pauper patients to be subjected to repeated Cesarean section unless they particularly desire it." As regards the others, he is again reported to have said "that they should be made to share the responsibility with he physician. In such cases the husband and wife have the right to demand sterilization, though I should earnestly dissuade them from it after the first operation, and point out to them the possibility of a subsequent death of the child and the absolute impossibility of having another after such an operation. If, however, the patient required a second operation, the matter should be left almost entirely in her hands; but my advice would tend in the direction of rendering her sterile at that time, as no matter how favorable our results may be an occasional death is bound to occur."

Personally I think that with results from a primary operation

such as I have given, 6.6 per cent. mortality, we are not only justified but compelled judiciously to expand the field of operative interference. In the days when the mortality from the operation was 20, 30, or 40 per cent., it was not right to subject a woman to a second or third operation; but with a mortality of 7 or 8 per cent. the question has been entirely altered, and particularly is this the case when we know that the percentage mortality in repeated sections is appreciably lower than in first. I have said we should judiciously expand the field of operative interference—everyone must decide for himself what is judicious expansion. I can only give you my own personal and present feelings on the matter; they are as follows: (1) A patient should be sterilized by hysterectomy if labor has been in progress for long or if there is the probability of her having become infected. (2) A patient should be sterilized, and preferably by hysterectomy, if she has any organic disease such as valvular disease of the heart, phthisis, etc., or if she is constitutionally very delicate. (3) With the good results now being obtained by Cesarean section, and especially in cases where the operation is repeated, strong, healthy, uninfected parturients should not be sterilized. (4) As regards how often the operation should be repeated, that is a matter which at present must be decided by patients and their medical advisers. I am, however, inclined to agree with Whitridge Williams, that if a patient has undergone the operation twice or thrice, she should be sterilized.

The danger of repeated Cesarean section has been recently gone into so fully by Wallace that it is quite unnecessary to take up much time in considering it. Wallace says: "Taking into consideration 60 modern cases, Cesarean section was performed twice in each of 43 cases, three times in each of 15 cases, four times in one case, five times in one case." The mortality in the 60 cases works out at 9.5 per cent. Without attempting to collect all the cases since Wallace's paper, I have found that Green has reported nine cases, while in my list there are two. Besides these I have found reported eight single cases, which makes in all 19. Among them there was only one death, reported by Green, which reduces the mortality to 6.3 per cent. One might raise this objection, that successful cases are most generally reported, but if you look at the table in which only operators who have reported series of cases are mentioned, you cannot fail to be struck with the fact that the repeated operations shows a very small mortality indeed. Wallace has gone into the question of adhesions most carefully, and

Spencer, Sinclair, Braun and others have pointed out the value of such. Personally I am in entire agreement with Wallace. In the two cases in which I have repeated the operation, on both occasions adhesions to the anterior abdominal wall were most extensive. In a case where the uterus ruptured, not included in my list but described and shown to-night, there was only a massive fibrous band and a tag of omentum attached to the anterior wall below the fundus. In one of the cases I employed Fritsch's fundal incision, and in one the anterior longitudinal incision. Green's experience in his nine cases is practically the same, in only one case were there no adhesions. Undoubtedly it is most desirable to operate extra-peritoneally if possible, and consequently I am quite in agreement with Sinclair and Wallace in doing everything to favor the formations of adhesions. In stitching the uterine wound, however, after a second operation the edges of the wound should be separated all round; this should not be done as commonly as some have suggested.

In bygone days, when careful suturing of the uterus was not carried out, this accident of rupture through the scar was by no means uncommon. It is now generally considered that such a danger need hardly be reckoned with, especially amongst those who are strong advocates of the conservative operation. Personally I have experience of the occurrence in one of my cases, and you see on the table the uterus from the patient referred to. She was admitted for a second Cesarean section about three weeks before term. The night of admission she complained of slight abdominal pain after an enema had been administered. The pain, however, did not prevent her sleeping soundly. In the morning there was still slight pain, and this gradually increased until it became finally pretty severe. There was no collapse, and the pulse did not register more than 86. I performed abdominal section and found the child in the unruptured membranes and with the placenta attached free in the abdomen, the uterus with the rent through the old cicatrix being retracted and lying down behind. I removed the child, membranes and placenta, then performed supravaginal hysterectomy and treated the stump retroperitoneally. The patient made an excellent recovery. I may say that I performed the previous Cesarean section myself and employed the fundal incision. On the present occasion, on opening the abdomen there were only an adhesion of omentum and abdominal parietes to uterus. The bowel was not adherent to the uterus.

Having taken up the whole subject of rupture through former

Cesarean section cicatrices in a separate paper, which will shortly appear, I would only mention that I have found in the recent literature cases reported by Targett, Galabin, Guillaume, Woyer, Everke, and Meyer, a fairly good number, considering how few repeated operations have been recorded. But, in addition, it must be remembered that several operators, Korn and Bar for example, at the subsequent operation have referred to the great thinning of the uterine cicatrix, and Smyly speaks of the uterine cicatrix in one case being so thin that it gave way to the pressure of the thumb. Probably the most curious case of all, and one which of course was only indirectly associated with the previous operation, was the case reported by Abel, where the posterior uterine wall ruptured presumably because it became overstretched. It is perfectly evident, therefore, that the danger of rupture is a very real one, consequently if the patient is not sterilized the uterine wound must be very carefully stitched and good union obtained as far as possible. The patient must also be very carefully watched during any subsequent pregnancy. I certainly think that a most important preventive to the accident is the formation of extensive adhesion to the anterior abdominal wall, and I quite agree with Wallace and others, who advocate that steps should be taken to insure such an occurrence.

There are several other details which, had time permitted, I should have liked to have discussed to-night. Amongst these may be mentioned the preparation of the patient, the time for operating, as to whether the uterus should be opened into before or after being turned out of the abdomen, the controlling of the hemorrhage from the uterus and the suturing of the uterus. As, however, the full consideration of these questions would occupy too much time, I can only give you briefly my own practice and experience.

I cleanse not only the abdomen in the ordinary way with soap and water, turpentine, alcohol and carbolic dressing, but I make a point, and, as I said before, I attach great importance to this, of washing the vagina very carefully, not simply douching it out. I employ $\frac{3}{4}$ per cent. Lysol for this purpose. During the operation I use only normal saline solution for my hands and swabs. I never use sponges. The swabs are never rinsed twice, for that necessitates employing another nurse. I find 50 are required for an operation. A nurse removes the swabs from the oven and rinses them out of saline solution; another attends to the instruments, and my assistant is the only other one who comes directly into

contact with the patient. It is a decided advantage to limit as far as possible the number of those directly taking part in the operation.

I have no hesitation in operating upon multipara before labor has started, also on primipara. If hysterectomy is to be performed, it is always better to operate then, for the stump to be stitched is small. When, however, the conservative operation is to be performed on a primipara, I now always wait until labor has started, for I have twice seen trouble, once very considerable trouble, follow the operation performed before labor, from the retention of blood clots in the uterus.

The fundal incision I do not think any advantage except when hysterectomy is to follow. In the latter case, however, as it allows more easy extraction of the child, I usually employ it.

The hands of the assistant, and subsequent kneading of the uterus I have always found quite sufficient for the purpose of controlling hemorrhage. Only once have I seen the uterus remain absolutely atonic and refuse to retract. As will be seen from the report, I performed supravaginal hysterectomy in that case (Case 13).

I frequently turn the uterus out of the abdomen before opening into it, but often I do not do so. With intact membranes it is no matter which one does, but if the membranes have been ruptured before operation, and especially if there is any possibility of the amnionic sac having been infected, then the uterus should be turned out first of all and then amputated.

For suturing the uterus there is no doubt cat-gut is the best material. Although silk is the pleasanter to work with, and can be more easily sterilized, it has this great disadvantage that if by any chance it becomes infected during convalescence a troublesome discharging sinus results. In two cases in which I used silk this followed, and in one case operated upon some months ago the patient has still a discharging sinus.

As regards the children, all except one (Case 2) were extracted alive; but one (Case 5) died in hospital shortly after its birth; thus the fetal mortality is 3.3 per cent. Many of the children when born were asphyxiated, but as there is always a house surgeon ready to take charge of them, no time was lost in resuscitating them.

REFERENCES.

Galabin: Brit. Med. J., Vol II, 1902, p. 1123.

Williams: Obstetrics, 1903, and Trans. Amer. Gyn. Soc., Vol. 28, 1903, p. 128.

- Leopold: *Archiv. für Gyn.*, Bd. 56, 1898, p. 1.
 Cameron: *Brit. Med. J.*, Vol. II, 1902, p. 1126.
 Duncan: *Trans. Obst. Soc.*, Vol. 42, 1900, p. 258.
 Targett: *Trans. Obst. Soc.*, Vol. 42, 1900, p. 242.
 Routh: *Trans. Obst. Soc.*, Vol. 42, 1900, p. 244.
 Horrocks: *Trans. Obst. Soc.*, Vol. 42, 1900, p. 259.
 Spencer: *Jour. Obst. & Gyn. Brit. Empire*, Vol. I, 1902, p. 138.
 Sinclair: *Jour. Obst. & Gyn. Brit. Empire*, Vol. V, p. 130.
Trans. North England Obst. Soc., 1901, p. 66.
 Wallace: *J. Obst. & Gyn. Brit. Empire*, Vol. II, p. 555.
 Van Braun-Fernwald: *Archiv. für Gyn.*, Bd. 59, 1899, p. 320.
 Green: *Trans. Amer. Gyn. Soc.*, Vol. 28, 1903, p. 120.
 Smyly: Reference Wallace's paper.
 Guillaume: *Ref. C. für Gyn.*, 1896, p. 1286.
 Everbe: *C. für Gyn.*, 1901, p. 72.
 Woye's Manual for Gyn., Bd. VI, p. 192.
 Meyer: *C. für Gyn.*, 1903, p. 1416.
 Bär: *Le Cois de Pathologie Obstetricale*, Paris, 1900.
 Abel: *Def. Van Braun-Fernwald*.
 Munro-Kerr: *J. of Obstet. Brit. Empire*, Vol. II, 1902, p. 2,
 and *Brit. Med.*, Vol. II, 1902, p. 1130.
 28 BERKELEY TERRACE.

CESAREAN SECTION IN LATE LABOR.

A FEW REMARKS REGARDING ITS LIMITATIONS, WITH THE REPORT OF A CASE.

BY

RUDOLPH W. HOLMES, M.D.,

Chicago.

Assistant Professor of Obstetrics and Gynecology, Rush Medical College.

IN opening the discussion of Cesarean section by reporting two cases operated upon under adverse circumstances, it is not the intention of the writer to cover the indications for the late operation, but rather to adduce certain valid objections which would seem to impair the justifiability of the procedure. It has always been the writer's firm conviction that the appropriate time for abdominal hysterotomy was at term before labor had begun, or at least not long after active contractions have been in progress. We all know that patients withstand the stress of a laparotomy far better when they have had preliminary care for a few days before the operation; as

elective procedures for surgical indications are best undertaken after adequate preparation, so also grave obstetric operations may only best be carried to a successful issue by like preparation.

The writer has accepted Dr. Williams' recommendation that in contracted pelvis the upper limit for an absolute indication for a Cesarean section should be raised from 6-6.5 centimeters to 7 centimeters, as a most timely one when the mother and child are still in good condition; the broadening of the field of Cesarean section is in keeping with the advances of modern surgery. While the writer holds this opinion, he still is strongly of the mind that craniotomy, even on the living child, is the only rational and scientific procedure in certain cases.

The contraindications to the Cesarean section in late labor center in the following facts:

1. Prolonged labor lowers the woman's resistance to shock.
2. Prolonged labor conduces to atony of the uterus, therefore to hemorrhage, occasionally necessitating hysterectomy.
3. Prolonged labor develops certain effete substances, catabolic products, which are eliminated more slowly than they are produced; possibly these effete substances lower immunity by a species of auto-intoxication; therefore, infection is more prone to occur.
4. During a protracted labor certain secretions, blood, mucus, etc., are poured into the uterus and vagina which offer excellent culture media for the development of bacteria normally present in the parturient canal, or introduced by examinations: in protracted labor we often see intra-partum infections, which promptly disappear with the evacuation of the uterus, or run a course as a puerperal infection. This danger is increased by attempts to deliver per vaginam before the abdomen is opened. The facts enumerated in this and the preceding paragraph are indelibly associated.
5. After the membranes have projected through the os externum, or the head has moulded into the os, they are exposed to the contamination of the vagina; in removing the secundines and the child through the uterine incision they may soil the peritoneum, or wound.
6. The prolonged labor frequently is the determining factor in the death of the child, or at least so jeopardizes its life that its prospects are curtailed. If attempts to deliver have been instituted, it should be remembered that forceps occasionally will seriously maim the child, so it dies later, yet in utero, the heart tones remain regular and strong.

I have to thank Dr. Charles Galloway, of Libertyville, Ill., for

the opportunity of operating upon the woman whose case report is herewith presented:

Mrs. M., primipara; 26 years of age; married, February, 1900. Last menstrual period February 8, 1904; labor due November 15, 1904. Residence, some miles from Libertyville, in a farm house. Labor began on the morning of November 13, with weak, irregular contractions; during the night they became more regular and stronger. Towards evening of the 14th, labor was fully established, pains recurring every three to five minutes. At 3 A. M. of the 15th the membranes were accidentally ruptured during an examination; the os was nearly dilated. At 6 A. M. the woman began to show the effects of her long labor, so the termination of the labor was deemed advisable; with the assistance of Dr. Taylor forceps were applied by Dr. Galloway, in hopes that the head might be sufficiently moulded to permit its extraction; two attempts with the forceps clearly proved that the pelvic contraction was too great to permit such delivery; craniotomy was not attempted as embryotomy instruments were not available. At 8.30 A. M. I was summoned by telephone, and arrived at the patient's home about noon.

Examination.—The chloroform anesthesia of the early morning had fortunately caused a marked diminution in the intensity of the contractions, giving the woman a much needed rest. Pulse was 120-130; temperature was normal. The back of the child was to the left—extremities to the right; the head was clearly outlined to the eye through the abdomen, as the anterior (right), parietal boss projected a full finger and a half over the pubes. The weight of the child was estimated to be about $8\frac{1}{2}$ pounds. The heart tones were 140, strong and regular, situated normally for an L. O. A. position. Internally the posterior (left) half of the head was found moulded into the brim; the sagittal suture was almost in the transverse, near the pubes.

Pelvis and Soft Parts.—The uterus had retracted firmly upon the child with the development of a retraction ring, not quite at the half way point to the umbilicus. The membranes were ruptured, and the liquor amnii had fully drained away; the cervix was effaced, and the os fully dilated. The pelvic measurements were: Spines, 27; crests, 28; trochanters, 32; baudelocque, 20; diagonal conjugate (from the lower of the two promontories) was 9-9.5 centimeters; the vera was estimated to be 7-7.5 centimeters. An estimate of the upper conjugate was not possible from the moulding of the head. The sacrum had the characteristics of a rachitic pelvis. The linea pectinata were easily palpable

with the finger. Pelvic type—a rachitic, generally contracted pelvis, with some flattening.

Preparation for the Operation.—As the surroundings for the operation were not those usually demanded for a section, and as the writer did not have a full equipment for a laparotomy, it may be of interest to cite the expedients used in the emergency. His satchel contains every essential for a pure obstetric procedure, yet in a great measure his armamentarium includes many of the necessary instruments for a cutting operation, as scalpel, artery forceps, sutures of all kinds, etc., but does not contain laparotomy pads, sponges, towels, etc. Small towels (12) were arranged in two packages of 6 each, and wrapped in towels—these were the laparotomy pads. Large towels were likewise wrapped to be used as coverings for the patient, the tables. Gauze was cut into small pieces for sponges, and similarly wrapped. All these were placed in a large boiler, and boiled for an hour. Various pans were also boiled in a suitable container. A few instruments were added by Drs. Galloway and Taylor.

The Operation.—Anesthesia was begun at 1.50 P. M. by Dr. F. M. Martin. The abdomen was prepared in the usual way. The incision was made at about 2.15, and was rather high up on account of the presence of a retraction ring; the uterus was delivered through the abdominal wound, the intestines packed off with towels, and the wound partly closed with a volcellum forceps. An anterofundal incision was made in the uterus. The placenta was on the anterior uterine wall, and escaped as the womb was opened, closely followed by the breech of the child; a leg was seized, and the child readily extracted—the cord clamped, and cut—then turned over to Dr. Taylor; it was apneic, but soon breathed normally. Being short handed, and as there was considerable bleeding, a rubber tube was placed about the cervix; some large pieces of membrane were sponged out. The uterine wound was hurriedly closed with a continuous catgut suture, then the tubing was removed; interrupted catgut stitches were applied. As the catgut was rather small, four silk sutures were added for safety. No blood had entered the abdominal cavity. The abdominal wall was closed in layers with catgut, and silkworm gut. The abdomen was dressed with chinosol gauze, cotton, and adhesive strips.

During the operation salt solution was given subcutaneously. There were three interruptions during the operation, due each time to difficulties with the anesthetic, which possibly lost us fifteen minutes of valuable time.

The Lying-in Period.—The patient was placed in bed about 3.15 with a pulse of 150, which gradually declined to 120 by the next afternoon; the highest temperature was 101 at the end of the first day—thereafter it was essentially normal, rising to 100 or 100.4 on a few occasions. As the bowels had not been satisfactorily emptied before the operation, that is by catharsis, small doses of calomel were regularly given the next day, followed by salines and enemata; emesis was frequent on account of the torpidity of the intestine aggravated by the mercurial. Stitches were removed on the eleventh day; the lower angle of the wound had failed to unite—a serous fluid bathed the wound, but there was no pus. The patient sat up on the 19th day; she could not nurse her baby, but it thrived on modified milk.

The Baby.—It weighed 8 pounds; was $20\frac{3}{4}$ inches long; bi-parietal diameter, $9\frac{1}{5}$; bi-temporal, $8\frac{4}{5}$; sub-occipito-bregmatic, $10\frac{3}{5}$; occipito-mental, $15\frac{2}{5}$; bis-acromial, $13\frac{3}{5}$; the head was irregularly moulded, the caput being on the left parieto-occipital region from the fact that the right side had rested on the pubes; a distinct groove was found parallel to the sagittal produced by the pubes. Markings due to the forceps were noted. The posterior fontanelle was closed, the anterior was very small.

The notes of the following case have been mislaid—the essential points illustrate the dangers of a Cesarean section in a protracted labor. In 1900 I saw a woman a few weeks before term; she had a generally contracted pelvis of about 7 centimeters. The dangers and necessities of the case were discussed with the husband and the woman. The family determined upon the eventual craniotomy in spite of her adherence to the tenets of the Church which prohibits an embryotomy on a living child; in their dread of a cutting operation both absolutely declined to consider the laparotomy. Plans were fully provided for the woman entering an hospital at the onset of labor; in spite of this arrangement the labor had been in progress nearly twenty-four hours before they notified me. The necessity of going to the hospital had to be thrashed out anew; late at night she was admitted to the Lying-in Hospital with pains fully developed. During the next day her mind vacillated between the craniotomy and section, swayed by her spiritual tenets and the dread of a surgical procedure; in their uncertain, wavering minds no permission for action could be obtained. Finally at night when the woman was worn out, she consented to any form of relief. The Cesarean section was

undertaken on a worn-out patient, after a labor continuing over forty-eight hours. She died about 72 hours post-partum of peritonitis. The child lived.

Epicerastic Criticism.—Two operations were considered in the first case—craniotomy and Cesarean section; symphyseotomy was not debated as the pelvic measurements were too small to justify its employment, as the writer does not hold to its validity in a pelvis below 8 centimeters; that is, symphyseotomy comes into concurrence with Cesarean section when a full relative indication for the latter is present. Craniotomy was disposed of by Drs. Gallo-way, Taylor, and the writer, on account of the regularity and intensity of the heart tones, presaging a child in good condition; the parents were willing to risk the greater maternal dangers from their strong desires for a child; with a rather large child, ossification well advanced, and the heart tones normal, it would have been a serious matter to have destroyed the infant, and then secured its delivery. The favorable circumstances for the Cesarean section were the good condition of the child, the natural strength of the woman, not unduly worn from her labor in spite of the accelerated pulse, and that she was in the country, thereby minimizing the danger of an infection; one needs but practice in the country to know that the liability of infections are infinitely less than in city work. That the patient was away from hospital facilities was a serious drawback.

Two technical errors were committed during the operation: One, in not removing the uterus, for the writer believes it should generally be done when the Cesarean section is done in late labor as a prophylactic against hemorrhage, and infection, especially the latter; this is particularly essential when delivery per vaginam has been attempted. The uterus was not removed because there were the minimal dangers of infection, the woman was not standing the operation well (from the difficulties with the anesthetic), and we were short-handed. Under like circumstances it would seem that the original technique of the Storer-Porro-Tait operation has a place, on account of the celerity with which it may be accomplished. The second error was in placing a ligature about the uterus; it was done because we did not have a full quota of assistants. The ligature should be considered an essentially obsolete means of controlling bleeding.

In the second case, most certainly it would have been better, in fact the only correct thing, to have presented Cesarean section to the family as the sole means of delivery. Five years ago the

writer believed that the different operations, with their potential dangers should be presented to the family, permitting them to decide as to the method. His views have changed somewhat in this regard; the untutored minds and judgments of the members of the family too often are incapable of passing opinions; now he would lay down the essential facts as they seemed best for the interest of those concerned.

In conclusion, the writer would deprecate the Cesarean section performed with inadequate assistants, faulty surroundings and makeshift facilities; the writer has had ample opportunity of testing an emergency Cesarean section under trying circumstances, and feels strongly that it should not be done unless there be very pressing indications.

412 NORTH STATE STREET.

SIX CASES OF CESAREAN SECTION.*

BY

JOS. B. DeLEE, M.D.

Chicago, Ill.

Case I was referred to me by Dr. Guy Gowan. Mrs. D., age 28, II-para, Irish, Catholic; had a hard instrumental delivery at her first labor with a complete laceration of the perineum. The cervix and roof of vagina sloughed out, leaving a narrow fistula leading up into the uterus. An unsuccessful secondary perineorrhaphy left a rectovaginal fistula. A few months later patient had gangrenous appendicitis and after operation a large hernia developed in the scar. Patient is now pregnant at full term, and labor has been in progress for 12 to 15 hours. The bag of waters ruptured.

Examination. Abdominally; large child, head diameter of 12 cm., slightly contracted pelvis. C. D. 12 cm. C. V. 10 cm. Bispinous 10 cm. False promontory, bones large and heavy. Signs of rachitis. Vaginally; no cervix can be felt. The vagina ends in a single vault, in the apex of which a small lump of tissue can be felt. No cervix or os is discoverable. The vagina is full of feces and gas. In view of the difficulties of extracting the large child through the scarred uterus and vagina, and the dangers of general infection in producing so much traumatism in the presence of so much fecal matter, it was

*Chicago Gynecological Society, March 17, 1905.

deemed wiser to remove the child through the abdomen, and amputate the uterus if it was found impossible to dilate the sinus from above. The child's interests were likewise considered better in an abdominal delivery.

The section was typical. The uterovaginal fistula on the uterine side would admit a fine toothpick. It could not be rapidly dilated. The uterus was atonic and hemorrhage very profuse, so the amputation of the uterus was performed. A piece of the lower uterine segment formed the stump, as it was not considered advisable to remove any more of the vagina, and the bladder relations were disturbed. There was hardly any broad ligament at the base, and it was with difficulty that the vessels were found, owing to the distortion produced by the scars. The child was a female weighing $9\frac{1}{4}$ lb.

The mother rallied poorly from the operation, and 6 hours later was in bad condition, with a running pulse at the wrist and 192 heart beats counted with a stethoscope. Extreme pallor and prostration. Saline solution had been given on the operating table. Acting on the assurance that there was no internal hemorrhage, only rectal saline solution was given, without other stimulation, and patient gradually recovered. Primary union in the wound. Good lactation. Mother and babe thrived.

Case II referred to me by Dr. R. Graves.

Mrs. S. II-para, age 26, Italian. First labor craniotomy, with extensive lacerations. Patient has a flat rachitic, kyphoscoliotic pelvis. Spines, 26; crests, $25\frac{3}{4}$; trochanters, 30; C. D. to false promontory, $8\frac{1}{2}$; C. V. $6\frac{1}{2}$ to 7; bi-ischiatic, 10; sacrum convex from side to side and upper half convex from above downward. Head projects 1 inch in front of the pubis. Labor lasted 8 hours. Cervix, 4 fingers, half of head in pelvis, the anterior half arrested on the pubis.

Conservative Cesarean section. Female, 6 lb. Smooth recovery for both.

Case III referred to me by Dr. Trenchard. Mrs. J., age 33, primipara, German. Flat rachitic pelvis of high degree of contraction. C. D. 8 cm. CV 6 to $6\frac{1}{2}$. Head high above promontory makes a visible tumor over pubis. A very marked granular vaginitis is present, with a profuse green, purulent, foul-smelling discharge,

Porro Cesarean section. No complications. Smooth recovery for both.

Case IV referred to me by Dr. White. Miss H., colored, age 18, primipara, kyphoscoliotic flat rachitic pelvis, also generally

contracted. Patient is a rachitic dwarf, and is afflicted with acute gonorrhea.

Porro Cesarean section, leaving one ovary and part of the tube. No complications at time of operation, but patient ran a ten days' course of high fever. The wisdom of removing the uterus was thus proven. Male, $7\frac{1}{2}$ lbs. thrive at the breast.

Case V is one treated 2 years ago in the service of the Chicago Lying-in Hospital Dispensary, and whose case was reported at the meeting of this society shortly after.

Mrs. F., Italian, born in Naples, Catholic, age 34. Her first, second and third labors were normal and easy. The fourth was long, terminated by a physician, and the child, though small, was dead. She then came to America. Her fifth labor was slow, but normal, with a small, living child. Her sixth labor was the one referred to, terminated by myself, by version and craniotomy.

The measurements are: spines, 25; crests, 28; trochanters, $28\frac{1}{2}$; Bandelocque, $19\frac{1}{2}$; C. D., $9\frac{1}{2}$; C. V., $7\frac{1}{2}$; bi-ischiatic, 6. The sacrum is sharply curved and the rami pubis are so close together that it is almost impossible to insert two fingers between them. The pubis can be grasped like the handle of a dipper; it is "beaked." Osteomalacic pelvis of high degree.

Patient entered the hospital in labor, and was operated on before the classes of Northwestern. The conservative section was performed without incident. Then the ovaries were removed. (Unfortunately these were destroyed so that sections could not be obtained, to confirm Fehling's findings in osteomalacia.)

The child was a male weighing $6\frac{1}{2}$ lbs. It lived. The recovery of the mother was interrupted by an abscess in the wall of the uterus, probably from infected catgut, but the uteroabdominal scar was firm, and up to one year no hernia had developed.

Case VI was another from the service of the Chicago Lying-in Hospital Dispensary and her case, too, has already been reported before this society. This is her second Cesarean section.

Mrs. H., age 28, IV-para, Prussian Jewess, has a generally contracted flat rachitic pelvis. C. D. $10\frac{1}{2}$; C. V., $8\frac{1}{2}$; bi-ischiatic, $5\frac{1}{2}$. Craniotomy was performed on the first child, after preparations for symphyseotomy had been completed. Reason for desisting was bad condition of child.

Cesarean section was done in the second labor. Recovery complicated by infected silk, which suppurated for 8 months. During this period an abortion occurred, spontaneously. The

fourth pregnancy was the present one and the labor occurred at full term. 9

The omentum was adherent to the abdominal wall and also to the uterus, requiring some time in separation. Transverse fundal incision (made also the first time on this patient) and 9½ lb. boy delivered alive. Cried at once, which is unusual, and in this case probably due to slow delivery. Operation otherwise not unusual.

Patient rallied well, but soon symptoms of obstruction of the bowels appeared. Obstipation, vomiting, prostration, pulse 132, respiration 60, hiccough, tympany. The tight binder was loosened and immediately the symptoms ameliorated. The bowels moved within 10 minutes and the patient was out of danger in two hours. Recovery of both mother and child perfect.

These six cases, in which all mothers and babes lived, added to four others already reported, make in all ten cases of Cesarean section. Of these 9 mothers recovered and 9 babies lived. One child died in 16 hours under symptoms of acutest sepsis, though the mother recovered. It had fever of 101° when delivered.

The one case that died was one that had been in labor three days, had been examined under ether three times, and who had a solid tumor of the ovary blocking the pelvis completely. The technique of the operation was varied but little in each case. The transverse fundal incision was used only twice. There is no advantage in it. The uterus was amputated three times, once for obstruction to the lochial flow and twice because of a severe vaginitis. One ovary was left in each of these cases to preserve the ovarian function as long as possible.

The uterus was delivered through the incision in all the cases, but the abdomen was closed in three layers and no hernia has developed in any of the cases.

Altogether the results encourage one to extend the field of Cesarean section.

A STUDY OF FOUR HUNDRED CASES OF TUBERCULOSIS IN CHILDREN.*

BY

SAMUEL S. ADAMS, A.M., M.D.,

Washington, D. C.

IN this paper it is my intention to deal with tuberculosis affecting the brain, the lungs and the abdominal viscera. This will necessarily exclude a large number of cases of tuberculous affections, more especially those of the lymph-glands, the bones and joints. The cases here analyzed have been under the observation of my colleague, Dr. G. N. Acker, and myself, and our predecessors in the Children's Hospital, District of Columbia, and are, unfortunately, not always accurate in detail. The hospital was established on a small scale in 1870 and considerably enlarged in 1878. I have been on continuous duty, except six months in 1880, since 1876, and have availed myself of the courtesy of my colleague to familiarize myself with many of the cases not under my own supervision. From nearly thirty years' experience with tuberculous patients, much knowledge of tuberculosis and its treatment has been gained and, though my ideas may seem pessimistic, nevertheless the conclusions drawn are not the outcome of theory, but the deductions drawn from cases "under control"—to use a laboratory term.

The children have varied in age from early infancy to fifteen years; but the maximum age was fixed at 12 years about 15 years ago, and white infants under two years have only been admitted since 1894. Age seems to influence the location of the tuberculous process in the white and black. The white infant and young child is much more susceptible to tubercular meningitis than the negro; but tubercular peritonitis is quite common in the negro and rarely seen in the white child.

Frequency.—As to the frequency of tuberculosis in young children, the statistics of numerous clinicians preclude the possibility of reaching a definite percentage. Positive results, however, are significant as to the seat of the tuberculous process. In Holt's 119 personal cases, under 3 years, the lungs were affected in 99 per

* Read before the Washington Obstetrical and Gynecological Society, February 17, 1905.

cent.; and in 131 autopsies, chiefly upon children of over 3 years, in the Pendlebury Hospital, Manchester, England, the lungs were involved in 93 per cent. The statistics of the Children's Hospital, District of Columbia, would show the frequency of tuberculosis approximating the percentage of cases examined by Müller of Munich, in which 40 per cent. were tuberculous. On the other hand, the records of the Washington Hospital for Foundlings would give a percentage less than that of either the New York Infant Asylum (8 per cent.) or the New York Babies' Hospital (14 per cent.). The large number of cases in the first named Washington institution is due to the admission of negroes, in whom it is the exception not to find tuberculosis at autopsy, whatever the immediate cause of death. Its infrequency in the Washington Hospital for Foundlings, when compared with similar institutions in other cities, may be attributed to racial and social influences. The infants admitted are almost entirely the offspring of American whites whose environment is superior to that of the pauper class of any other city. Observation in these two institutions alone would justify the statement that of those dying from tuberculous disease the lungs and bronchial lymph nodes were involved in 90 per cent.; and in only a small number of those dying from pulmonary tuberculosis was non-involvement of neighboring organs noted.

While the histories of many cases are incomplete and inaccurate, the data obtained show that the tuberculous affections under consideration often directly followed attacks of whooping cough, measles, influenza or rachitis. In some instances, bronchitis or bronchopneumonia is recorded as the antecedent disease, but we are too familiar with the course of tuberculosis to lose sight of the fact that the tubercle starts the bronchitis or the bronchopneumonia.

A large portion of the cases show an inherited predisposition directly from one or both parents who were suffering from, or had died of tuberculosis. In the negro, especially, not only the parents, but often brothers and sisters now had, or had died of tuberculosis. There is no record of an infant having had tuberculosis at birth. The mode of infection could seldom be traced in the menigeal variety, but in most of the pulmonary and abdominal cases house infection played a prominent part.

The distribution of the tubercles varied, but in the largest number of cases the lungs were involved. Of the 459 cases of tuberculosis admitted to the hospital, the lungs were affected in

365, the meninges in 63 and the abdominal organs in 33. The liver, spleen, kidneys and lymph-glands were usually involved in marked cases of the pulmonary variety. The liver in one case and the intestines in two cases were alone involved. Calcification was very rare in the lymph-glands and less so in the lungs, while caseation was common in both lungs and bronchial glands and universally so in the mesenteric glands in the peritoneal variety.

TUBERCULAR MENINGITIS.

Tubercular meningitis is a tuberculous inflammation of the pia mater of the brain, sometimes involving that of the cord. It is also known as acute hydrocephalus, or "water on the brain," on account of the effusion of fluid into the ventricles; and because of the location of the tubercles the term basilar is frequently employed. It may be said to be a local manifestation of tuberculosis at the base of the brain, which is characterized by marked cerebral symptoms due to the deposits of tubercles in the pia mater. It is usually associated with general tuberculosis, but there may be no tuberculous deposits discovered outside of the cranial cavity. It occurs most commonly in early life and is occasionally met with during infancy. While in older children it may be found associated with tuberculosis of bones, joints or lymph nodules, in infancy the tubercles are usually confined to the brain. Many irregularities in its symptoms are presented, typical cases being rarely seen in the first two years of life, hence the difficulty of early recognition. In a large number of cases there is a tuberculous history in the family, hereditary in the sense that the infant possesses a predisposition to the development of the tubercle bacillus. In many cases this bacillus attacks an individual when absolutely no trace of inheritance is discoverable. It cannot be doubted that the tubercle bacillus is transported from some part of the body to the brain through the blood or lymph. In very many instances the seat of the original tubercle cannot be determined, though the exciting cause must have gained admission to the body months before the appearance of the characteristic manifestations. The evidence of exposure to infection being absent, the structures involved are often apparently the primary seat of disease. When tuberculous deposits are recognized in the bronchial glands, lymph nodules, bones or other structures of the body, no surprise is occasioned if there are evidences of involvement of the structures at the base of the brain. Infection may come from without through various articles of food, such as the

breast milk from a tuberculous mother or wet nurse, or milk from a tuberculous cow, or perhaps the infant may be infected by inhaling the tubercle.

The onset of tubercular meningitis in infants is so insidious that one is excusable for not suspecting the real nature of the disease. The child is peevish, capricious, easily frightened, dull, irritable, will not play, and wishes to be held. If left to himself, he is perfectly satisfied, but when disturbed exhibits great irritability, and nausea or vomiting. He is sleepy, but sleep is frequently disturbed. Soon vomiting of a projectile character is noticed, which cannot be traced to any indiscretion of diet or management, coated tongue, anorexia, constipation, fever, and perhaps an occasional outcry, shrill in character and known as the hydrocephalic cry. Following these are the symptoms of still greater irritation of the brain, such as slight stiffening of the neck, very slow pulse, pain on motion, unequal pupils which react slowly to light, diminished reflex of both conjunctivæ. During this time the child sleeps, except when aroused for the purpose of nourishing him, when he will take his food slowly. In some instances the *tâche cérébrale* is present, but this cannot be regarded as diagnostic. Finally, when the exudation is sufficient to produce compression, the last stage is ushered in by convulsions, which may recur at brief intervals, or cease only to reappear just before death. During this entire period coma is well marked. There is that peculiar stare of the eye, with dilated pupils, which respond very slowly, if at all, to light. The fever, which has previously been high, may now remit. The infant usually lies upon his side with the head slightly retracted, the limbs drawn up, the fingers closed over the thumb. The respiration is of the Cheyne-Stokes variety.

Upon macroscopical examination are found very small tubercles in the meninges, especially in the meshes of the pia mater along the course of the vessels at the base of the brain. The irritation produced by the presence of these growths causes greater or less transudation into the lateral ventricles of the brain. In some cases there is also a fibrinopurulent exudation between the pia mater and the convolutions at the base, particularly in the fissures of Sylvius, and it may cover the whole convexity of the brain. While in childhood the lesions found appear to be sufficient to account for the symptoms, this is rarely so in the infant in whom the symptoms are out of proportion to the cerebral lesions; and yet the most careful examination has failed to disclose tuberculous deposits or caseous nodules outside of the cranial cavity. This

would seem to warrant the hypothesis that in infancy, at least, owing to some peculiarity of environment, the tubercles in the brain generate a virulent toxin, for in no other way can the rapidly fatal influence be accounted for, inasmuch as they do not seem to be capable of such destructive activity when located, even in much larger numbers, in any other structure of the body. Death can hardly be attributed to the pressure occasioned by the effusion, which is not always sufficient to distend the ventricles, because in other intracranial diseases the child may live for months, although the effusion may be so great as to rupture the walls of the ventricles, obliterate the convolutions, distend the fontanelles, and separate all the sutures.

Diagnosis.—From the foregoing symptoms it would seem reasonable to suppose that one could very easily make a diagnosis of tubercular meningitis and, indeed, this would be true if we could hold the diagnosis in abeyance until the typical manifestations made their appearance. While prominent symptoms mark the stage of irritation in the older child, such is not the case in the infant. In the latter the symptoms during the stage of irritation, while giving evidence of the departure from the normal condition, are usually not sufficiently characteristic to lead the most careful physician even to suspect the presence of so grave a disease. It is true that the mother may have noticed the change in disposition, the peculiar expression of the eye, the desire for sleep, and some other symptoms which convince her that her child is not well, but they may not make a deep impression even upon her mind. The stage of compression usually occurs before the gravity of the cerebral symptoms is recognized by the physician, but, owing to the incompleteness of the early clinical picture, he is apt to be misled into supposing that the convulsions, stupor and coma are due to some extracranial disorder; hence it may be for several days that the physician is in doubt as to the differential diagnosis. The duration of the disease in the child is usually about a week, but it may last a month.

The examination of the spinal fluid is of no practical value in establishing the diagnosis. It has been our invariable experience that the clinical diagnosis has been verified by the necropsy some days before the report on the fluid has been received from the laboratory.

Prognosis.—The prognosis depends upon the accuracy of the diagnosis. If we are sure that the case is one of tubercular meningitis, we may as well prepare the parents for the fatal termina-

tion. Judging from my own observation, I would question the diagnosis of any case of tubercular meningitis with a favorable termination. Of 60 cases of tubercular meningitis treated, 58 died and 2 left the hospital unimproved.

Treatment.—Since I regard this disease as uniformly fatal, palliative treatment is about all that can be expected. Lumbar puncture to relieve pressure is useless.

ACUTE TUBERCULOSIS, ACUTE PULMONARY TUBERCULOSIS, ACUTE MILIARY TUBERCULOSIS, ACUTE DISSEMINATED TUBERCULOSIS OR ACUTE GENERAL TUBERCULOSIS.

This is a rapidly progressive variety of the disease due to the infection of various organs and tissues by the bacillus. This form is more frequently seen in children, but the primary focus is seldom discovered during life. It is this variety which so frequently follows an infectious disease, such as measles, whooping cough, in a child whose previous health had been such that there was not a suspicion of latent tuberculosis.

The tubercles thickly stud the lungs and in some of our cases there was but little sound tissue left. In some cases the bronchi, pleura, liver, spleen, lymph-glands and kidneys had tubercles thickly studding them.

The most prominent characteristic of the disease is the marked toxemia. There may be local symptoms so prominent as to indicate special activity of the bacillus on certain organs, but we must not lose sight of the fact that even pulmonary tuberculosis is a general toxic condition with a local manifestation.

The symptoms indicating involvement of the lungs are added to those of general toxemia. In our series there were 209 cases, of which 65 were improved, 19 unimproved and 124 died.

In tuberculosis the change in the blood principally consists in the diminished quantity of the hemoglobin of the corpuscles rather than a decrease in the number of the corpuscles themselves. Yet this is not always so. Lazarus-Barlow says: "When anemia occurs along with early tuberculosis of the lungs (especially if no fever is present), it is commonly of the chlorotic type and the number of leucocytes present is normal. But when anemia occurs in the later stages of pulmonary tuberculosis, the complications introduced by ulceration, sweating, fever, etc., are so great that it is almost impossible to make any general statement concerning the condition of the blood, and quite impossible to decide how far the blood change in any particular case depends upon the

tuberculosis itself, how far it is due to disturbing intercurrent causes."

Types of Pulmonary Tuberculosis.—1. Cases Resembling Infantile Athrepsia. Owing to the similarity of incipient tuberculosis in general to several other diseases, a great deal of confusion in its symptomatology may occur. So also in the various types in which the tuberculous process is confined almost entirely to intrathoracic structures may a differential diagnosis be impossible before considerable destruction of lung tissue has taken place. In infants there are no characteristic symptoms. The paleness, loss of weight or continued daily failure to gain weight, languor, loss of appetite, and failure in strength, in spite of the ingestion and apparent digestion and assimilation of food of proper quality and sufficient quantity, are strongly suggestive of infantile athrepsia. Such cases are usually seen in infant asylums and may remain obscure until the necropsy reveals the deep-seated tuberculous process. Sometimes, however, the terminal stage of the disease is recognized by the irregular temperature, from 100.5° to 102.5° in the rectum, slight, dry, hacking cough, and breathing more frequent than is consistent with the character of the pulse and temperature. Physical signs, if present, point to scattered areas of bronchopneumonia or bronchitis. One is also apt to be misled by evidences of disturbances in the gastroenteric tract, such as occasional vomiting and greenish, watery, undigested stools. If such general symptoms should immediately succeed whooping cough, measles or influenza, it is at least strong presumptive evidence of military tuberculosis, and the physical signs would determine its location in the lungs.

There have been a few cases of this kind among our cases, but the occasional failure to obtain necropsies on infants has still left us in doubt as to its frequency.

2. Cases Resembling One of the Continued Fevers. In older children there is usually a period of several weeks during which marked but indefinite symptoms occur to excite the anxiety of the parents. There is a gradual decline in health, marked by anemia, a change of disposition—a bright, vivacious child becoming sluggish and fretful—loss of appetite, and indigestion. Such cases are sometimes seen in the early school life and may be attributed to overtaking the child mentally and physically. He is now taken from school with the hope of improvement, but a daily rise of temperature soon sets in and is suggestive of typhoid or malarial fever. There are no local symptoms to account for the fever, but

examination of blood and urine may, by exclusion, strengthen the suspicion of tuberculosis. A positive diagnosis, however, can only be made after the disease has so far advanced in the lungs as to give the characteristic local signs and symptoms. Such cases are rarely seen in hospital practice in their incipency; the marked symptoms of tuberculous infection usually are present when the child is admitted.

3. Cases Running a Rapid Course.—In such cases the occlusion or destruction of pulmonary tissue is so rapid and extensive as to suggest bronchopneumonia, to which the symptoms are due rather than to the numerous miliary tubercles scattered in groups, with intervening areas of inflammation, throughout both lungs. The symptoms are cough, dyspnea, rapid respiration, fever and prostration. The range of temperature is not always as high as would be expected from the severe general symptoms and well-marked physical signs. Bloody expectoration or hemorrhage from the lungs is rare in children, but one of my cases of this type died during the second severe hemorrhage, and another, under the care of Dr. Acker, had a number of profuse hemorrhages before the last fatal one. These are the only cases of hemoptysis mentioned in our series. We may detect several cavities of varying size. The physical signs of complete consolidation of a large area, as in croupous pneumonia, are seldom present. Of 99 cases in this series, 32 were improved, 5 unimproved, and 62 died. It may be assumed that the 32 improved and 5 unimproved were removed from the institution when the hopeless nature of the ailment was explained to the parents.

4. Cases Running a Protracted Course.—In such cases caseous nodules, large and small areas of caseous pneumonia, spots of broken down tissue are found in both lungs. This is the type of pulmonary tuberculosis most frequently seen in infants and young children. Its course is irregular and may vary from one to six months. If the general tuberculous condition precedes the localization in the lungs, cough, rapid breathing, loss of weight, prostration, etc., develop slowly. When the pulmonary symptoms develop first, they resemble those of bronchopneumonia. When it occurs as a sequel of measles, whooping cough, or influenza which has been complicated by bronchopneumonia, the early symptoms may be marked. The general local symptoms abate, but the cough continues. In a few weeks the child becomes worse, the cough increases, the temperature rises to 103° , and well marked physical signs are detected. Fever, though not high, is always present in

children. Of 80 cases, one was *cured*, 31 were improved, 5 unimproved, and 43 died.

5. Chronic Form.—This is usually the result of one of the acute forms, which results in a chronic interstitial pneumonia with tuberculous caseous deposits. The child apparently recovers from an acute attack, but does not regain his health and spirits, showing a decline in health. A careful physical examination will give evidence of structural changes in the lungs. The course of this type may extend over two or three years. The physical signs are identical with those of bronchopneumonia. Of the 21 cases of chronic tuberculosis in our series, 9 were improved and 12 died.

TUBERCULOSIS OF THE PERITONEUM.

Tuberculous infection of the peritoneum is probably of secondary origin from the disease located in the intestinal tract. There may be either acute or chronic tuberculous peritonitis, but there is little likelihood of recovery in either. Spontaneous recovery is said to have occurred in some cases and relief is often given by laparotomy. Our results with laparotomies have not been so favorable and the *spontaneous cures* have usually led to a change of diagnosis. Of 30 cases of this variety, 2 were *cured*, 8 improved, 3 unimproved and 17 died.

A summary of the 400 cases would show:

Cured	3
Improved	114
Unimproved	29
Died	254

A mortality of 63.5 per cent. would look well for the treatment of tuberculosis were we not reminded that, although we have not a record of the cases that left the hospital, nevertheless, we are justified in assuming that most, if not all, of them died within a reasonable time after being discharged.

TREATMENT.

Doubtless it would be interesting to review the history of the medical treatment of tuberculosis, but the enormity of the task would be impressed upon one should he attempt to examine the literature upon this subject. Indeed, the stack of cards in the Surgeon General's library showing the number of articles upon this subject since 1900 is so large that even a review of them would require many days. However, a superficial examination of the older writers convinces us of the futility of the claims of those

who are vaunting modern methods. More than 150 years ago tuberculosis was considered a contagious disease, and as a prophylactic measure, the Venetians ordered the destruction by fire, of the clothing and furniture of those dying of tuberculosis. The Sicilians also deserted the tuberculosis patient, and, after his death, ordered the destruction of his clothing.

In the face of this statement, fifty years later, Thomas asserts that tuberculosis is not infectious.

By the early history we find that the disease was treated as an inflammation, and various remedies were used for this purpose. The patient was nauseated, bled and cupped for the disease.

If I should attempt to entertain you by the various remedies used, I would be compelled to exhaust the drugs described in the pharmacopeia.

During the past twenty-eight years I have had the opportunity of witnessing the various methods of treatment, many of them lauded as curative and specific, but each, in its turn, has been found wanting. If I should divide this period into periods of five years each, we would find that, during the first five years, cod-liver oil, internally and externally, was generally used as a curative measure. This drug was given in increasing doses until the tolerant stomach refused to hold the increasing doses, and the skin was rendered so foul that the patient was a nuisance to himself and his friends.

Next came the treatment by insufflation of sulphuretted hydrogen into the rectum. Well do I remember repairing to the bedside of a poor consumptive, in the last stages of the disease, with an apparatus for the generation and insufflation of this gas. Great hope was held out to him in this supposed curative measure, and at this late date I shudder to think of the suffering that unfortunate man must have endured from the great distention caused by the gas. He would tell me to go on with it, even after his abdomen was painfully distended, and on more than one occasion I have known the gas to be emitted from his mouth in volumes. This treatment was short-lived. During this period we witnessed the treatment by the pneumatic cabinet and doubtless some will remember how the poor sufferer's lungs were stretched, in the hope of effecting a cure. This method was of shorter duration than some of the others, and the expensive cabinets were not even marketable in the junk shops.

About 1890 we received a "*sure cure*" fresh from the laboratory of Koch. A favored few received the lymph direct, but it was

not long before this remedy was found wanting, and even Koch himself finally admitted that it was never intended as a curative measure, but that his friends, in their enthusiasm, had misrepresented his intentions.

About 1895 the treatment by creosote found its advocates, and the patients were now saturated with creosote. I admit that, in the hope of benefiting this class of sufferers, I too, gave as high as 40 drops of creosote three times a day and urged the patient to take more. During the present decade numerous remedies, most of them proprietary, the principal of which is Russell's Emulsion, have been placed upon the market as cures for tuberculosis.

From my experience, I am prepared to say that I know of no specific for the disease. That we can relieve many of the symptoms by the application of well-known and well-tried remedial agents, I will admit, but there is no specific medical treatment.

THREE CASES OF REPAIR OF INJURY TO THE URETER; TWO BY TRANSPLANTATION INTO THE BLADDER, AND ONE BY END-TO-END SUTURE.

BY

A. LAPTHORN SMITH, B.A.; M.D.; M.R.C.S., Eng.

Professor of Gynecology in the University of Vermont, Burlington; and of Clinical Gynecology in Bishops University, Montreal; Surgeon in Chief of the Samaritan Hospital for Women; Gynecologist to the Montreal Dispensary, and to the Western Hospital and Consulting Gynecologist to the Women's Hospital, Montreal, Canada; Fellow of the American, British and Italian Gynecological Societies.

THERE are three principal ways in which the ureter may be injured so as to give rise to a ureteral fistula. First, by being compressed between the child's head and the pelvic wall during prolonged labor, with impaction of the head; second, by being compressed between the blades of the clamps during vaginal hysterectomy for cancer; third, by being accidentally cut during the removal of a large abdominal tumor, especially when the latter occupies one of the broad ligaments. The relative proportions, as appear in a paper by Yeergman, who collected 68 cases, were: Parturition, 25 cases; vaginal hysterectomy, 12 cases; abdominal section, 3 cases. I have to report three cases in which the injury occurred in each of these three ways.

Case I, which was due to parturition, has already been reported the 1901 meeting of the Canada Medical Association, at Win-

nipeg, and was published in the *Philadelphia Medical Journal*, October 5, 1901, but Cases II and III are now reported for the first time. Mrs. J. B., 34 years of age, consulted me at the Montreal Dispensary on July 1, 1901, giving the following history: She began to menstruate at 14, was always regular, and flow was painless. Married at 31, and had one child at 32, while living near Vancouver, B. C. I subsequently learned from her physician that he had been called to visit a woman sixteen miles in the country, without knowing what was the matter. When he arrived there he found it a case of labor, with the head impacted in the pelvis. He went back to town for his forceps, but by the time he returned and delivered the head the latter had probably been impacted for two days. A few days later large pieces of sloughing mucous membrane came away from the vagina, and she was constantly wet with urine. For the next eighteen months she had a miserable existence, being constantly wet and smelling of urine, as well as being in great pain from the ulcerated and excoriated condition of the labia. Her friends then made a collection to send her to England to try to get cured, and she went to one of the principal hospitals in London, where plastic operations to cover up the hole in the vagina from which the urine flowed were twice attempted, but failed each time. The failures were no doubt due to the mucous membrane of the vaginal vault being converted into cicatricial tissue. After remaining there for three months she became discouraged, and insisted upon returning home, and it was while passing through Montreal on her way back to Vancouver that she was induced to see me at the Montreal Dispensary. On attempting to examine her there it was found impossible without an anesthetic, owing to the extreme sensitiveness of both vulva and vagina, both of which were covered with excoriations and ulcers. Steps were at once taken to render the urine less irritating, and as soon as a bed was vacant at the Western Hospital she was sent in for further examination. With regard to her family history, there was nothing of interest, excepting that her mother died from difficult childbirth, showing that a small pelvis is inherited, as I pointed out in my paper before the Southern Surgical and Gynecological Association, some ten years ago, entitled "What Civilization Is Doing for the Human Female."

Diagnosis.—Before deciding upon any operation it was essential to make an accurate diagnosis. The urine was running away

from the vagina, but where was it coming from? The bladder or ureter? And if the latter, which ureter? As the patient was extremely sensitive, she was anesthetized, and the bladder having been emptied with a catheter, it was then filled with sterilized milk, while the vaginal vault was carefully dried; only a small part of a drop of milk was seen to come from the apex of the funnel forming the vaginal vault on the patient's right. An effort was then made to pass a probe into this tiny opening, which at first could not be done. Finally, however, the probe passed into the right ureter a distance of six centimeters. While the probe was in the ureter a ureteral sound was passed in the bladder and seen to enter a short distance, but it was impossible to make the two metallic instruments touch each other, although a great deal of trouble was taken to do so, thus showing that there was a stricture of the ureter below the fistulous opening into it. This also proved that it was really a ureterovaginal, and not merely a vesicovaginal fistula. As the quantity of urine coming from the fistula was less than the total quantity secreted by the kidney on that side, I came to the conclusion that there was some obstruction to the flow into the bladder, as well as difficulty in the escape of the urine from the fistula; in other words, first, that there was no vesicoureteral fistula; second, that part of the urine passed by the natural valvular opening into the bladder, which valve prevented the milk or methyl blue solution from passing from the bladder into the ureter, and third, that the fistula was not merely a vesicovaginal one. The quantity passing by the fistula was ascertained in the following manner: The catheter was passed into the bladder every two hours and the quantity measured. Then the patient was made to sit on a chamber for two hours on several occasions, and the quantity which dribbled away was carefully ascertained. While the two quantities together measured sixteen drachms every two hours, the quantity which dribbled away in that time was only five drachms, while the quantity drawn from the bladder was about eleven drachms. After the examination the fistula closed up completely, and for five days she was perfectly dry for the first time in three months. The explanation of this temporary improvement was that the manipulation with the probe had set up a local inflammation, with swelling of the lining of the fistula, so that its caliber was closed. In a few days, however, the wetting of the bed began again, and I decided to operate for its closure. Being loath to resort to the serious operation of transplantation of the ureter until I had first given her a chance, how-

ever small, of having it cured by a vaginal plastic operation, the latter was undertaken, with the promise to the patient that if it failed, as it had done twice in London, I would almost surely be able to cure her by opening the abdomen and transplanting the ureter. Boveé, in his excellent paper, says: "In but few of the ureteral vaginal fistulæ can a cure be procured by vaginal plastic surgery. The danger of relapse from heavy strain, or from cicatricial contraction, is too great to permit this plan to be adopted in any but the most favorable cases."

Vaginal Operation.—The fistulous tract was dissected out with a sharp pair of curved scissors and tenaculum, and three silkworm gut sutures were passed around it with great difficulty, owing to the mass of cicatricial tissue in the vagina reducing this canal very much in size, and making it conical, with the point of the cone exactly at the fistula. Much to my regret, this only stopped the flow for a few days, after which it was worse than ever. One more attempt was made, this time by removing the fistulous tract for a distance of one centimeter, and then passing a purse string suture of silkworm gut around it and high up. This was exceedingly difficult, but was finally accomplished. But the tissues were so friable that the stitches cut through and the patient was still worse. The poor woman was by this time very much discouraged and worn out physically, so that I felt fully justified in doing the more radical operation, and which at the same time was more sure of effecting a cure, and to this the patient readily consented.

Transplantation of Ureter.—On August 17, 1901, assisted by Dr. Ritchie England and Dr. Gillespie, the following operation was undertaken. The abdomen was incised in the middle line, from the pubes to the umbilicus, down to, but not through the peritoneum. The latter was then easily pushed off the abdominal wall on the right side, and not only the bladder, but also the large vessels of the pelvis were exposed to view, my intention being to find the ureter and cut it off close to the fistula, and to transplant it into the bladder higher up, without opening the peritoneal cavity at all. Although I nearly succeeded in doing so, and would have no difficulty in doing so should I ever have a similar case, yet on this occasion several circumstances threw me off the track, and I was eventually obliged to follow the plan I had seen Sanger follow in a similar case in Leipsic, when I was there three years ago, namely, to open the peritoneum running over the large vessels at

the brim of the pelvis, and to feel for the artery, see the vein, and pick up the third tube, which was the ureter.

One of the circumstances above referred to was the vomiting, which started violently the moment the anesthetizer ceased to pour on the anesthetic, and this he was obliged to do frequently, because she was so weak; and another was the distension of the stomach and colon with gas, although the bowels had been well moved and the small intestines were collapsed. The third was the retroversion of the uterus, owing to which I found two round tubes dipping down to the pelvis, one being the ovarian vein, and the other the round ligament. I mention these little difficulties so as to help any of my hearers who may have to perform this operation. Had it not been for the vomiting and the distension of the large bowel, the intestines would have been easily pushed into the upper abdomen, as the patient was in the highest Trendelenburg posture, without which, indeed, the operation for me would have been very well nigh impossible. Another cause of the difficulty in finding the ureter was in not first passing the probe into it from the vagina before the operation, for when I asked one of my assistants to do this during the operation, he was unable to find it. When at last I was reluctantly compelled to open the peritoneal cavity, I had only to make a little slit in the peritoneum lining the wall of the pelvis, in the line of where I knew the ureter should be, when I quickly came upon it and picked it up. About one inch of the lower end of it was embedded in cicatricial tissue, and, of course, this much of it had to be sacrificed; a silk ligature was passed around it, while my assistant pulled it taut, and I tightly tied it and cut it off. The ureter was then severed a little above the ligature and covered with a gauze sponge, as urine at once came from it. As most of the deaths or failures to unite have been due to the septic condition of the urine, I had taken the precaution to administer urotropine for a week before, so that I was not afraid of a drop or two escaping; and as stricture of the ureter is another cause of failure, I did not wish to bruise it with the forceps. We all thought it much thicker than we had ever seen it before; perhaps the obstruction at the site of the injury had caused it to hypertrophy, as it is a muscular tube, capable of peristalsis. The end of the ureter was split open to the distance of a third of an inch, so as to avoid subsequent stricture after it was transplanted, an accident which has marred the success of more than one case where this was not done. A slit was then made obliquely into the right upper corner of the bladder and the

ureter stitched into it, the mucous membrane of the ureter to the mucous membrane of the bladder, with very fine chromicized catgut, and the fibrous coat of the ureter to the muscular wall of the bladder with six fine black silk stitches. In doing this Van Hook's method was employed, which will be described later on. The bladder was then distended with a pint of weak methyl blue solution, but not a drop leaked through the point of transplantation. The two-inch cut in the peritoneum was closed with fine catgut, as was also the opening in the parietal peritoneum. In case that the transplanted ureter should fail to adhere, a drainage tube was passed down from the end of the incision in the abdomen to a little below the opening in the bladder. A *catheter à demeure* was introduced into the bladder and the abdomen was closed with silkworm gut, the patient going off the table in fair condition. Apart from the vomiting, which lasted three days, she made a good recovery. The *catheter à demeure* was left in for five days, by which time it was thought that the ureter would be firmly attached to its new place. She made a perfect recovery, and I have had several very satisfactory letters from her since her return to Vancouver.

This case was interesting for several reasons. First, because, as far as I am aware, it was the first operation of the kind performed in Canada, although it had been done successfully ten times in Europe and the United States up to May, 1899, including the one I saw Sanger do in Leipsic. The first successful experiments on animals were done by Paoli and Busachi, in 1888, the end of the ureter being split before suturing it into the bladder. Novaro (*Centralblatt f. Chirurg.*, 1893, Vol. XXVII, p. 596), following their method, performed the first operation on man. He made an incision in the end of the ureter 1 cm. in length. Although there was some leakage for a few days, there was a successful result. Penrose (*University Med. Mag.*, April, 1894), Krug (*Journal Obstetrics and Gynecology*, N. Y., 1894, p. 496), and Baldy (*AMERICAN JOURNAL OF OBSTETRICS*, 1896, Vol. XXXIII, p. 362) performed similar operations, employing the idea suggested by Van Hook in his anastomosis operations, namely, introducing two traction sutures, each with a needle at both ends, which is passed through the wall of the ureter from within out, forming a loop on its inner side. Both sides are now carried through the bladder wall from within out, coming out on one side of the incision. A similar suture is placed on the other side and the ureter drawn into the bladder opening by traction on the stitch, and fixed

there by tying. The only difference in my case was that I did not pass these silk stitches through the mucosa of either bladder or ureter, for fear of causing the formation of calculi on the silk. In Baldy's case, the proximal end of the ureter was too short to go to the bladder without too much tension on the sutures, so he brought the bladder over to that side of the pelvis by two stout catgut sutures. Kelly (*Johns Hopkins Bulletin*, Feb., 1895) gained one inch in his case by dissecting the bladder from the horizontal rami of the pubis and dropping it back into the pelvis. Boldt (*AMERICAN JOURNAL OF OBSTETRICS*, 1896, Vol. XXXIII, p. 844) passed a ureteral catheter into the fistula before the operation, which I forgot to do until after I had begun, and thus found the ureter more readily; after cutting the ureter off he left the catheter in the proximal end, and passed it into the bladder through the opening, and out through the urethra, thus running less risk of leakage if his union failed.

Fullerton (*Kelly's Operative Gynecology*, Vol. I, p. 463) severed a double ureter on right side. As soon as detected she closed the distal end and introduced both proximal ends into the same opening in the bladder, with good result.

Baum, Witzell, Vert and Kelly have performed extraperitoneal implantation into the bladder, and although they were all obliged, as I was, to open the peritoneum for a few minutes to find the ureter, I believe that with a little more experience we could complete the operation extraperitoneally, thereby reducing the small death rate, Kelly having lost but one case, on the seventh day, from sepsis.

Second—My case is interesting because it was due to difficult parturition. Fergman states that of sixty-five cases of ureteral fistula which he collected, twenty-five were due to this cause, and of these twenty-five, in sixteen the forceps were used too soon, and in nine they were used too late. In twelve vaginal hysterectomy was the cause, while two were due to stone in the ureter and ulceration; three to abdominal section; one had a traumatic origin; two from pelvic abscess; one from a pessary, and one from tubercular necrosis of the ureter, as in Krame's case.

Third—It shows the value of urotropine in making the urine aseptic; my patient had a temperature of 103 degrees a week before the operation, which may have been due to infection of the ureter, but if this was so, the urotropine apparently remedied it, for there was no temperature whatever after the operation.

Fourth—Owing to the extensive bruising at the time of the con-

finement, and also owing to the four plastic operations, the vagina was reduced to a very small cone of cicatricial tissue, so that repair by this means was out of the question. In a large and capacious vagina I believe that the ureter could be found and repaired by splitting open the vagina and exposing the base of the bladder, as in my method of repairing severe vesicovaginal fistulæ. In no case should we implant the ureter into the bowel, nor tie the ureter so as to cause hydronephrosis. Nephrectomy, even as a last resort, is hardly justifiable, in view of the possibility of there being only one kidney, and the splendid results of transplantation of the ureter.

CASE II, which was also one of transplantation of the ureter, and for which I am indebted to my friend Dr. Reddy, illustrates the second most frequent way in which this accident may happen.

Mrs. H., 29 years of age, Canadian. She began to menstruate at 14 and continued to do so normally till her marriage, at 16. She had one child a year later, which was born dead; this may have been due to syphilis, as she had such a history, but it is more probable that the child was still born because it was dragged out with instruments nineteen hours before the natural termination of labor. Five hours from the first pain the baby was delivered and dead. The reason assigned for this procedure was that the pains had stopped for a while at the end of four hours, and the accoucheur could not wait for them to come on again. She recovered from this labor more or less, but after eleven years she had to consult a physician for pain and leucorrhea. On making an examination he found a moderate laceration of the cervix, which he treated for about three weeks with tampons. She felt much better after this, but a few months later, feeling worse than ever, she consulted Dr. Reddy, who, finding a large cauliflower growth filling the vagina, at once diagnosed cancer of the cervix, and insisted upon her entering the Women's Hospital under my care. This was on Nov. 7, and no time was lost, for the next day I performed vaginal hysterectomy by the clamp method. The cauliflower growth was first removed with the sharp curette and scissors, as is my custom, and the remaining apparently healthy raw surface thoroughly disinfected with bichloride. The two upper clamps were put on the top of the broad ligaments from above, so as to guarantee that the ovarian arteries should not slip out, which is one of the risks of this operation, leading to death by secondary hemorrhage. On the other hand, it causes twisting of the broad ligament, and some claim that this increases the chances of catch-

ing the ureter between the jaws of the clamps. There was no shock, and everything went well until the clamps were removed, when it was found that there was some leakage of urine from the vagina, which, on careful examination, was found to be coming from the right ureter. She was allowed to thoroughly regain her strength from the first operation, and a month later preparations were made to transplant the wounded ureter into the bladder. She was given urotropin, as in the previous case, until the urine was thoroughly aseptic, and on December 7, with Dr. Reddy's assistance, the operation was performed. It was a little more difficult than usual, owing to the anatomical changes brought about by the vaginal hysterectomy, and the mass of inflammatory tissue resulting therefrom, which also prevented me from performing the extraperitoneal method. Also the injury was an inch higher up on the ureter than in the first case, so that I was obliged to detach the bladder from the pubis and draw it well up to meet the end of the ureter, which also had to be drawn down as far as it would come, in order to get it to enter the bladder, to the highest point of which it was attached in the manner already described. The peritoneum was sewed over the ureter and a drainage tube introduced down to the site of the implantation. Owing to an oversight, the glass *catheter à demeure* was not put in immediately, so that two or three times eight ounces of urine accumulated in the bladder. Whether from this cause, or owing to the tension of the sutures, due to the ureter being too short, about a fourth of the circumference of the ureter pulled out from the bladder, and to our great disappointment, the dressings were soaked with urine. Fortunately, the urine being aseptic, there was no infection and no rise in temperature. Not only did all the urine from the right kidney come out by the abdominal wound, but also a large portion of the urine from the other one. I had arranged the *catheter à demeure* in the bladder, with a light rubber tube leading into a measuring glass under the bed, and Dr. Reddy ingeniously arranged another catheter with a long tube to bring the urine from the abdominal incision to another jar. The nurse kept a careful table showing exactly how much urine passed through each catheter per twenty-four hours. As the patient was in splendid condition at the end of a month, I reopened the abdomen, found the hole in the bladder from which the ureter was partly pulled out, and stitched it up with much difficulty, owing to the amount of granulation tissue surrounding it. The patient bore operation well, although there still remained some leakage.

By sitting her up in bed and packing the wound in the abdomen more and more came by the normal opening, until within a month afterwards the fistula was completely cured and the patient went home, looking and feeling very well.

CASE III.—The third case was one of end to end suture of the divided ureter, the accident having happened during the course of an abdominal section for removal of a very large, broad ligament cyst. I was indebted for this case to my friend Dr. Virolle. She was a Mrs. G., 37 years of age, who came under my care on October 17, 1904. Menstruation began at the age of 12, and was always normal. She was married at 32, but was never pregnant. Eight months ago she noticed that she was getting larger in the abdomen. Her bowels were regular and her water was normal. She at first thought she might be pregnant, but on examination, her breasts were found to be those of a virgin. The uterus was small and pressed up against the right side in front. I sent her into the Samaritan Hospital, and a few days later, after being properly prepared, the abdomen was opened and a trocar introduced into the tumor, which extended up to the liver, allowing about two gallons of amber-colored fluid to escape, after which the tumor was easily drawn out; that is to say, the upper half of it. Being a broad ligament cyst, it extended up behind the intestines, which could not, however, be peeled off it. Many broad bands of adhesions had to be tied in segments in order to free the tumor enough to allow it to come out of the abdomen. Several times while tying these segments of peritoneum what was thought to be the ureter was picked up and nearly tied; but each time it was recognized and dropped again. About the sixth or seventh time that it ran this risk it was not recognized, and a clamp being put upon it, it was just being cut through with the scissors. When the latter had gone half way through it diagonally downwards and outwards it was recognized by the mucous membrane showing its nature, which was not evident before, on account of its great size and width, it being nearly three-quarters of an inch wide. However, it was only cut about three-quarters through, so that it was easy, although somewhat tedious, to sew the muscular layer all round, with interrupted sutures, and then another layer of running sutures was put over that. Efforts were made for another half hour to get the sac enucleated, but it was found so densely adherent to the layers of the broad ligament, and extended so deeply down to the pelvis, and lying on the large veins and arteries, that it was thought wiser to adopt the old plan of cutting the cyst

off, leaving enough only to enable one to sew it comfortably to the abdominal peritoneum. Two drainage tubes were then put in, one to the bottom of the remains of the cyst cavity, and the other down to the cut in the ureter, in case that the line of sutures failed to prove water tight.

Notwithstanding the prolonged operation, the patient made an uneventful recovery, without the slightest sign of urinary fistula. The drainage tube leading down to the ureter was removed in three or four days, when it was found that nothing was coming from it; but the other tube, going down to the bottom of the remains of the cyst, was left for several weeks, and there was during that time a watery discharge, which gradually became less and less. When it had quite dried up the tube was removed. The patient is now going around and feeling quite well. I might add that it would have been much easier for me to have removed the tumor by the new method of going down through the broad ligament of the healthy side and across the uterus and up on the other side, taking out both ovaries and tubes and uterus. But the patient begged that I would not remove her ovaries, so that, rather than have her die on the table from injury to the large veins, I thought it wiser to resort to the old method of marsupialization and drainage of that portion, about one-eighth of the cyst, which was so densely attached far down on the floor of the pelvis. The result has proved the wisdom of this course.

248 BISHOP STREET.

REPEATED TUBAL PREGNANCY.*

BY

EDWARD N. LIELL, M.D.,

Jacksonville, Fla.

Formerly Lecturer in Gynecology, New York Polyclinic, and Visiting Gynecologist to St. Elizabeth Hospital, New York, President Florida Medical Association.

(With two illustrations.)

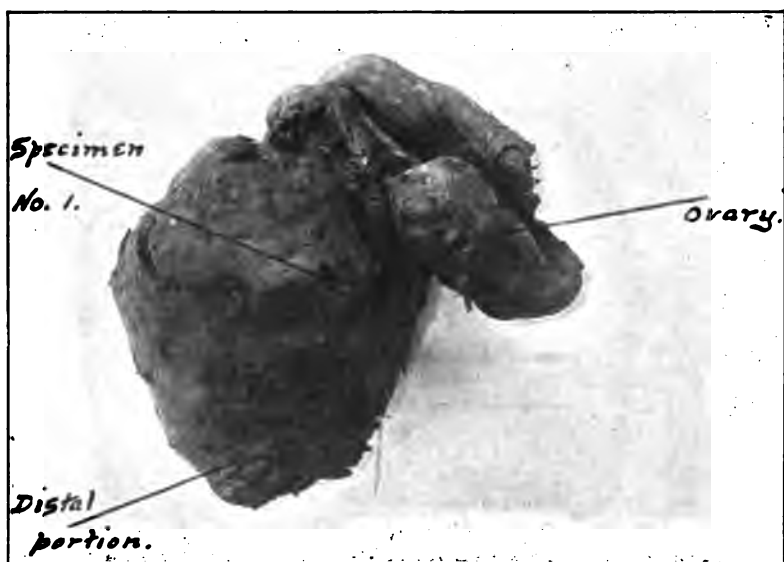
To successfully meet or cope with an emergency is to be prepared for it. The patient upon whom I have operated twice for tubal pregnancy, of which the accompanying specimens are the result, presents a rather unusual history. Age 38; has had two children, at full term. Sterility followed the birth of the second

* Read at the Thirty-second Annual Meeting of the Florida Medical Association, held at Jacksonville, Fla., April 19-21, 1905.

child for six years. Because of the existence of complete retroversion of the uterus, accompanied with some prolapse, a ventrofixation was performed in one of the New York hospitals six years ago.

On February 10, 1902, she first came to my office stating she had missed two periods, menstruation having been previously regular.

Examination detected only a slight enlargement of the uterus; the left tube, however, was enlarged apparently to the size of a small orange. A diagnosis of probable tubal pregnancy was made and an operation advised, to which she paid no heed. One



week later I was called in haste; I found her in great pain and rallying from an attack of syncope. An examination verified the diagnosis of tubal pregnancy made one week previously, with the addition of rupture and hemorrhage.

The patient still refused to consider surgical measures for relief, though about one month later, after tenderness had subsided sufficiently to map out an adherent tumorous mass the size of a small grape fruit, posterior to and to the left of the uterus, she gave her consent to an operation.

Upon opening the abdomen I found an enlarged tube, a slightly cystic ovary, and a mass of clotted blood and lymph, completely filling the pelvic space behind and to the left of the uterus.

The adhesions were readily broken up and the mass of clotted blood and lymph removed, when it was seen that the pregnancy and distension occurred in the distal portion of the tube near the fimbriated extremity, as shown by photo of specimen (Fig. 1). Recovery was complete and uneventful.

On October 10 of last year she again consulted me, complaining of a scanty daily flow since September 6. She had menstruated normally from July 7 to 12, and a scanty flow appeared one month later for one day, August 7. There had been no symptoms of pregnancy. Examination revealed an enlargement of the right tube the size of an orange. A diagnosis of unruptured tubal



pregnancy was made and, as in the previous instance, I advised immediate operation to avoid probable rupture and complications, to which she readily consented.

Upon abdominal section the enlarged tube was found closely adherent to adjacent intestine; these being separated, the tube was removed without rupture (Figure 2), an incision being made into the independent dilated portion subsequent to removal, in order to perceive the exact nature and condition of the contents. The minute fetus is well shown in both the specimen and the photograph, it presenting itself at the point of incision.

1 both instances, pregnancy had advanced to about the tenth

week, an interval of two years and eight months existing between each tubal pregnancy.

From the fact that previous to the operation of ventrofixation the patient had borne two children at full term, there is little doubt in my mind that both tubal pregnancies were the result of a faulty surgical procedure, and a false artificial position of the uterus.

The recognition and diagnosis of tubal pregnancy previous to rupture, when the opportunity presents itself, is practicable in a majority of cases, and can be made with almost as much certainty as can a normal pregnancy before the third month. The history of repeated tubal pregnancy as proven by operation on this patient and by the accompanying specimens, is cited not only to illustrate the fact that this complication is perhaps of more frequent occurrence than is supposed, but because of the interest that naturally attaches to such a rare condition.

From the foregoing, I am convinced that we may be justified in removing the remaining tube, whether diseased or not, at the primary operation. While the question of operation has reference usually to urgent symptoms presenting, because of rupture, yet the indication for operation is unquestioned in the unruptured class, to avoid such danger.

THE HISTORY OF THE OBSTETRIC FORCEPS.*

BY

H. G. PARTRIDGE M.D.,

Providence, R. I.

Visiting Physician to the Rhode Island Hospital and the Providence Lying-In Hospital.

IN the annals of the obstetric art there is no more fascinating chapter than that relating to the introduction of the obstetric forceps. I use the word introduction, rather than the term invention, advisedly, because as I hope to show in the course of the paper, our ideas as to the actual origin of the instrument are vague and indeterminate. Moreover, the statements made by modern authors vary considerably and what is still more significant, do not accord entirely with the facts as laid down by the early writers, who wrote during the days when the instrument was beginning to be popular. The earliest direct evidence which we have of the use of forceps in obstetrics is the discovery of a

*Read before the Providence Clinical Club, Jan. 4, 1905.

crude instrument evidently intended for this purpose in the surgeon's house in Pompeii. This house is one of several early exposed by the excavations, and is referred to and described in detail by several writers. I have been unable, however, to find any extended description of the instruments discovered.

There is no reference to the use of such an instrument in the works of Hippocrates, Celsus, Galen, Paulus Aegineta, or in the writings of any of the early Greek or Roman scholars. This omission was possibly due in part to the fact that midwives conducted most of the obstetrics during the early centuries. That this is not a valid argument, however, appears from the fact that Hippocrates devoted considerable space to subjects connected with obstetrics, including chapters on *Accouchement*, and on *The Extraction of the Dead Fetus*. It appears probable, therefore, that he had no knowledge of the use of the forceps.

The first writer who mentions the use of the forceps for the extraction of the living child is Avicenna, an Arabian physician, born A.D. 980, died A.D. 1037. His writings were translated into Latin, the common language of science, first by Gerard of Cremona, later by Andrea Alpago of Basle, and still again by Benedictus Rinius of Venice. The latter translation was published in 1555 and in it is found the following chapter:¹

Cap. 28. *De regimine ejus cujus partus sit difficilis causa magnitudinis foetus.*

Oportet obstetrix bonam faciat retentionem hujusmodi foetus: quare subtilietur in extractione ejus paulatim: tunc si valet illud in eo, bene est: & si non liget eum cum margine pani, & trahat eum subtiliter attractione post attractionem. Quod si illud non confert, administrentur forcipes, & extrahatur cum eis. Si vero non confert illud, extrahatur cum incisione, secundumque facile fit & regatur regimine foetus mortui.

In another chapter he gives directions for the extraction of a dead child, emphasizing the fact that his mode of procedure differs according as the child is alive or dead.

This may be freely translated as follows:

Chapter 28. Of the conduct of that (case) the delivery of which is difficult because of the size of the fetus.

It is necessary that the obstetrician exercise a good holding back of the fetus of this kind. Wherefore particularly in the extraction of it (it should be done), gradually; then if that avails for it, it is well; and if not he may bind it about with a border of cord, and may draw it carefully, with repeated tractions. But if that does not bring it on, forceps may be used, and it may be extracted with them. If in truth that does not bring it on, may be extracted by incision and according as it may be easy, and may be treated in the manner of a dead fetus.

His statement as given above will be seen to be a very direct reference to the possibility of delivering a living child by means of forceps, and is the first mention of such employment of them to be found in literature. The earlier writers did indeed mention instruments for the delivery of a dead child, such as the crotchet and the blunt hook, but here we find an explicit description of the use of instruments to preserve the child's life, and so far as is known this is the earliest description. Other writers after this date also mention a similar use of the forceps, but notwithstanding these references, we have no evidence as to who first devised the plan of so aiding Nature. It was probably a gradual outgrowth of experience, and an attempt to substitute an instrument for the hand of the accoucheur.

Among these later writers Jacobus Ruoff should be especially mentioned. He lived in the sixteenth century and was a native of Zurich. He wrote a treatise on obstetrics which was published in 1524, and in it describes and illustrates a long and a short forceps which he had invented. He expressly states that his instrument has on it no teeth, and that the child may be easily delivered by means of this forceps, if it be possible to apply them to the head. The forceps described by these various writers were crude affairs, the blades being solid and the two joined at a fixed point, and therefore they could be introduced together only, and then adjusted about the head. A moment's thought will enable one to appreciate how difficult this may have been in many cases, and as a result, how limited was the field of usefulness of the instrument.

During the next hundred years no advance was made either in the construction or in the use of the forceps. In the seventeenth century, however, the noted family of Chamberlens did so much in both regards that by many writers they have been described as the veritable inventors of the forceps. That this at least is not true, we have already seen, and this family, famous though it may be, deserves credit only for improving the construction of the instrument, and for bettering the technique of its use. How these results were obtained we shall now see. This famous family was originally resident in Paris. William Chamberlen, the founder of the English branch, was forced to leave Paris on account of his religious beliefs, and went to England in 1569. He was probably a surgeon. His eldest son, Peter, lived in London and had a fashionable practice there. He died in 1631. William had a younger son, named also Peter, and known as Peter the Younger,

who was born in 1572, and who is recorded as a licensee in midwifery. He died in 1626, leaving a son named Peter, who is known as Doctor Peter, he being the first member of the family to possess the degree of M.D. He received his degree from Padua in 1619, and later from Oxford and Cambridge. He, too, had a large and lucrative practice and died in 1683, at Woodham, Mortimer Hall, in Essex. Here it was that four forceps were found in 1818, which were exhibited before the Medico-Chirurgical Society of London as the original Chamberlen forceps.² Dr. Peter had several sons, of whom Hugh only requires special mention.

He was born about 1630. He was an accoucheur, but it seems to be doubtful whether he had a degree. He possessed the knowledge of the forceps, and in 1670 visited Paris and there met Mauriçeau, the famous obstetrician. Hugh stated that he could deliver the most difficult case "in the half of a quarter hour," and he was finally asked by Mauriçeau to deliver a woman who had been in labor about five days. He failed after three hours' exertion, and the mother died undelivered twenty-four hours after this attempt at delivery. Mauriçeau stated later that the uterus was badly lacerated by Chamberlen's attempts. Notwithstanding this failure, Chamberlen and Mauriçeau became good friends, and after Chamberlen's return to England he translated Mauriçeau's work on Obstetrics into English, and it ran through many editions.

Dr. Hugh was also an economist of some note, and because of some of his radical views was forced to leave England, and he removed to Amsterdam, where he died. While residing there he sold the so-called family secret to Roonhuysen, an obstetrician there. It is believed at the present time that Chamberlen disclosed to him the use of only one blade of the forceps, thus deceiving even when in straitened financial circumstances. Dr. Hugh left a son also named Hugh, who became a prominent physician, and who is said to have been the one who ultimately made public the family secret. The authenticity of this statement I cannot vouch for, and I am unable to find any direct reference to the publication of the family's method of delivery. This Dr. Hugh Chamberlen died in 1728, and was buried in Westminster Abbey. I have recounted these details regarding this family, because its members are generally considered to be the true inventors of the forceps. They claimed to have done this, and they kept for their own financial gain the knowledge

of this valuable and life-saving instrument. Not only did they keep it a secret, but openly declared their ability to deliver patients whom other physicians could not deliver, and also declared their intention of keeping the secret in the family.

We have seen that they did not discover or invent the forceps, and it can hardly be denied that others of their day must have known of the use of such an instrument as described by some of the earlier writers. What did this family do?

I have already mentioned the discovery in the old homestead in Essex, of four forceps, which are thought to have belonged to various members of the family. By comparing these with the description of the crude forceps, given by Jacobus Ruoff, it will be seen that the Chamberlens simply improved this old model. They disconnected the blades so that they might be introduced separately. They made the blades with fenestra and enlarged them somewhat. For doing these things the family deserves great credit, no doubt, but the base and mercenary way in which they kept the knowledge from their fellow practitioners almost clouds any luster which may have been added to their names by their ingenuity, and stamps them as utterly disreputable. An examination of these four forceps will also show how the models were gradually improved. The first is an extremely rough instrument, while the last differs in no important particular from the forceps in use at the present day.

We have now shown that the members of the famous Chamberlen family did not discover or invent the obstetric forceps; that they were ingenious and simply improved upon models with which they were undoubtedly familiar through the writings of their predecessors; that they kept their additions a profound secret and probably never willingly divulged it, and finally, that however much we must condemn their conduct, we must admit that they did more than any one to increase the value of the instrument. Such is the connection of this family with the forceps.

We have next to ask, how did the use of the instrument become general? This link in the chain is, up to the present time, missing. Hugh Chamberlin, the younger, died in 1728. We know that about this time Palfyn, a Dutch surgeon, showed and used a form of forceps. Drinkwater, an obstetrician of England, left at the time of his death, in 1728, a pair of forceps,⁸ and others mention such an instrument in their writings. We do not know, however, whether these various obstetricians independently devised the instruments used by them, or whether they had knowl-

edge in some way of the Chamberlens' instrument. However this may be, two writers deserve especial mention as being instrumental in publishing descriptions of forceps, and urging their use. These two men are Edmund Chapman and William Giffard. Most writers state that it was Chapman who first described the forceps, and published accounts of patients delivered by means of this instrument. On consulting the contemporary writers, and the writings of the two authors themselves, we find, however, that to William Giffard belongs the honor of the introduction of the forceps into use as an obstetric instrument.

The facts are as follows: William Giffard was a man-midwife of extensive practice in London. He died about the year 1731. After his death, in 1734, a book entitled "Cases in Midwifery," written by Giffard, was published by his friend Edward Hody. The cases recounted were seen during the years 1724 to 1731, and the earliest case in which he used his so-called "Extractor," which was the forceps, was recorded on April 8, 1726.⁴ This patient he failed to deliver with the forceps, and was forced to perform craniotomy. His first recorded successful case of forceps delivery is mentioned under the date of June 28, 1728.⁵

He gives accounts of 225 cases, in many of which he used his "extractor." In a number of cases also, he reports having used one blade only of the forceps. But what is chiefly of interest to us, he gives illustrations of the instrument as used by him, and also of a model "as improved by Mr. Freke, surgeon to St. Bartholomew's Hospital."

With these dates in mind let us now consider the claims to priority of Edmund Chapman and his supporters. His book entitled "A Treatise on the Improvement of Midwifery, chiefly with Regard to the Operation," was published in London in 1733. He states in his introduction that the secret by which the Chamberlens were enabled to deliver patients "was as is generally believed, if not past all dispute, the use of the forceps, now well known to all the principal Men of the Profession, both in Town and Country." Later in the book he extols the instrument highly, and states that "no person has as yet more than barely mentioned it." He goes into details as to the construction and use of the instrument, and criticises other models, but in his first edition gives no cuts, and, as a reviewer of his book states, does not describe his own forceps. This review appeared in a book entitled "Medical Essays and Observations," published in Edinburgh in 7,⁶ and elsewhere in this work also there is the statement that

Chapman kept the form of his forceps secret.⁷ In Chapman's third edition⁸ he apparently recognized his error, when too late, and publishes an illustration of his instrument, with an apology for not having introduced it into the earlier edition. Thus he virtually admits that he had not published full details as to the instrument in his early editions. It will thus be seen that while the works of Chapman and Giffard appeared at about the same time, Giffard was the one who published illustrations and a full description of the instrument, while Chapman did not do this until his third edition appeared in 1759. Moreover, Giffard's book was written prior to 1733, and the writer died before Chapman's work was issued. The exact date of the death of Giffard I have been unable to find, but in the preface of his book, written by Edward Hody, and dated July 30, 1733, he is mentioned as "the late Mr. William Giffard." In addition, in the account of one of his cases, added by the editor of the work, March 6, 1730-31, is referred to as being a few months before Mr. Giffard died.

From this survey of facts as derived from the original sources, it is clear that Giffard was the altruistic and honorable physician who should receive full credit for introducing the forceps into common use in England.

The next notable name connected with the early history of the forceps is that of William Smellie. He was an eminent physician practicing in London. He was born in 1680 and died in 1763. He had a good knowledge of mechanics, and modified the forceps and laid down directions for its use, based on sound reasoning. Indeed, many of his statements are to-day accepted as correct, and the forceps as at present used, especially in England, differs but little from his perfected model. He lengthened the instrument as then used, covered the blades with leather, and devised the lock now known as the English lock. In his large work on obstetrics⁹ he calls attention to the fact that "the common way of using them (the forceps) formerly was by introducing each blade at random, taking hold of the head anyhow, pulling it straight along, and delivering with downright force and violence; by which means both os internum, and externum were often tore, and the child's head much bruised. On account of these bad consequences, they had been altogether disused by many practitioners." Observing the harm often done by the forceps, he "began to consider the whole in a mechanical way, and reduce the extraction of the child to the rules of moving bodies in different directions." As a result of his studies, he gives explicit directions as to th

application of the instrument, urging that it is never to be applied until the cervix is fully dilated, and also advising the application to the sides of the child's head. He also recommends that the blades should be newly covered with strips of washed leather after each use.

His directions for manual dilatation show that his method was almost exactly that in vogue at the present day, and in this as in many other details he made a greater step forward than any obstetrician of his time.

The pelvic curve was added to the instrument by Levret, about 1747, and has been almost universally retained in the later instruments.

With Smellie the early history of the obstetric forceps may be said to end. And indeed while many different models were suggested and made during the next hundred years, no important advance was made until within our own memory, when Tarnier showed before the Paris Academy of Medicine his first axis-traction forceps. The principle had been recognized for some years, and various attempts had been made to construct a forceps which should bring the line of traction into coincidence with the pelvic curve. Tarnier had been occupied with the problem for a long time, and finally on Jan. 24, 1877, he presented two instruments at the meeting of the Academy of Medicine. Much discussion followed his announcement of his design, and much adverse criticism was heard. One writer after a rehearsal of the views of various authors, concludes with the remark that "experience must determine whether or not the innovation of Tarnier is advantageous."¹⁰ Experience has indeed determined, and the axis traction instrument of Tarnier is now recognized as being the most practical and best of all such instruments designed, and the principle of axis traction is universally held to be correct.

Since 1877 there has been no noteworthy advance either in the construction or technique of the forceps, and the history of the instrument may be said to end with the great addition of Tarnier. I can close this account with no more fitting words than those of Chapman: "All I can say in Praise of this noble Instrument must necessarily fall far short of what it demands. Those only who have used it, and experienced the Excellency of it to their own advantage and the Security of their Offspring can be truly sensible of its real Worth."¹¹

BIBLIOGRAPHY.

1. Avicennae, Liber Canonis de Medicinis Cordialibus et Can-
—ex arabico sermone in latinum conversa—a Benedicto Rinio

Veneto-Venetiis 1555. Liber III. Fen. XXI. Tract II., Cap. 26, page 390.

2. Med. Chirurg. Trans. Vol. IX., page 1856. London, 1818.

3. J. R. Quinan: *Maryland Medical Journal*, Vol. VIII., 1881-2, page 294.

4. Cases in Midwifery, written by the late Mr. William Giffard. Revised and published by Edward Hody, M.D. London, 1734; page 29.

5. Loc. Cit., page 47.

6. Medical Essays and Observations, Revised and Published by a society in Edinburgh, 1737, page 403.

7. Loc. Cit., page 322.

8. Treatise on the Improvement of Midwifery, Chiefly with regard to the Operation, by Edmund Chapman, Surgeon. Third Edition. London, 1759.

9. A treatise on the Theory and Practice of Midwifery, by W. Smellie, M.D. Fourth Edition, London, 1762. Vol. I., page 248 et seq.

10. Revue des Sciences Medicales. Tom. X., 1877.

11. Loc. Cit., page 86.

242 BROAD STREET.

THE USE AND ABUSE OF THE UTERINE CURETTE.

BY

R. P. McREYNOLDS, M.D.,

• Philadelphia, Pa.

THE uterine curéte was first introduced by Récamier in 1846. It seems strange that previous to this time no one had conceived the idea of using a sharp instrument within the uterine cavity for the purpose of removing diseased tissue. The new instrument did not at first receive a flattering reception, and although it was condemned by surgeons from all parts of the world, the most intense opposition came from Récamier's own countrymen—Dubois, Velpeau, Avan, Becquerel, Gallard, Chassignac, Crede and others opposed it. Scanzoni was very severe in his denunciation of it; he claimed that it was based on erroneous theories and was void of all utility. Hildebrandt thought the curette would injure the healthy part of the uterus and allow the diseased part to remain intact. In our own country Parvin, A. Simpson, Barnes, and later on Marion Sims, Taylor, Howard, Barker, Byrne, Goodell, Palmer and others came out in favor of the

curette. Marion Sims, as we all know, modified and improved Récamier's curette, and to-day we have no better instrument than the one he has given to us. It seems strange that a progressive man like Emmett should have been so severe in his denunciation of the curette; in the 2d edit. of his book, *Emmet's Princ. and Practice of Gynecology*, page 617, we find this statement: "As regards the instrument of Sims, I honestly believe that the ingenuity of man has never devised one capable of doing more injury." He claimed to have seen peritonitis, cellulitis, pelvic abscess and even death follow the use of the instrument. Munde in his *Minor Surgical Gynecology*, expressed a decided preference for the dull curette, he claimed that it was safer, while quite as efficient; an opinion held by a good many of the older men. Notwithstanding all the adverse criticism, the curette gradually increased in popularity and came more and more into general use—in fact there seems to have developed a mania for curetting the uterus, and the operation was resorted to for all or nearly all of the ills of womankind. Vulliett in referring to the craze very aptly described it as "Curomania." It might perhaps be compared to the "Ovariomania" of a few years ago. I think I can truthfully say that these diseases do not exist to-day, and that the indiscriminate curetting of the uterus and removal of ovaries and tubes is no longer fashionable. The more accurate and scientific knowledge of the uterine conditions requiring the use of the curette has in no way lessened its popularity or restricted its usefulness. The curette is to-day in the hands of not only every gynecologist and obstetrician, but of nearly every general practitioner throughout the country. A distinguished New York gynecologist says, "If I had to have one instrument to treat a woman I would beg that one to be a sharp curette." When we consider how extensively and universally the curette is used we would naturally expect to find some cases where harm rather than good has resulted from its use. I have operated upon women suffering from the effects of sepsis caused, I suspected, from the too zealous use of the curette in the hands of the family physician.

This article is based upon the study of 170 cases of curettement and is prompted by a desire to point out in a general way some of the conditions in which I have found it to be beneficial, and others in which it is liable to be followed by serious and perhaps fatal complications. I use the sharp curette almost exclusively, but not agree with those who claim that the dull curette should be

forgotten. I occasionally find use for a large dull curette, and should hate to see it taken from my instrument case.

Endometritis hyperplastica chronica or polyposa (Olshausen); subinvolution of the uterus; puerperal conditions of the endometrium caused by the retention in utero of some of the products of conception, yield promptly, as a rule, to a thorough and careful curettement of the uterus, unless there is already present disease of the adnexa, or a general septic infection. I scarcely even find it necessary to leave a packing of gauze in the uterine cavity, and when I do I make it an invariable rule to remove it within twelve hours. I can conceive of no condition requiring gauze packing or drainage to be left in the uterus for from five to seven days as advocated by Burrage, or from two to five days as advocated by Vanderveer and others.

A great many of these cases, especially those following abortions and miscarriage, have suffered severely from pain and hemorrhages before we see them, and when they come to us they are profoundly anemic and often septic; a curettement is accompanied by more than the usual amount of danger; they take the anesthetic badly and we must always bear in mind the possibility of shock, perforation of the uterus, pulmonary embolism, and septic pneumonia. We make it a rule to give them the minimum amount of ether (no other anesthetic should ever be used), and to finish the operation, if possible, during the primary stage of anesthesia, all the preliminary part of the operation, the washing up, etc., being done before the anesthetic is started. We use for the curetting, the finger (if the cervical canal is dilated sufficiently to admit it), followed by a large, moderately sharp curette, or sometimes a large dull curette; the uterine cavity is irrigated with hot (110° or 115°) water, or normal salt solution. We have given up all antiseptic solutions for this purpose and think safer and better results are obtained by using the hot water or normal salt solution. If the uterus does not contract as it should, we can nearly always bring this about by packing the uterine cavity with gauze and then manipulating the uterus between the finger in the vagina and the hand on the abdominal wall; the gauze is then removed, and if it is reapplied only a small strip is left in the uterine cavity.

In malignant growths not permitting a radical operation, a careful curettement and the free use of the cautery, followed by chloride of zinc gives surprisingly good results; the pain, foul discharge and hemorrhage are relieved, life is rendered much

more comfortable and materially lengthened. In fact it is an open question if this procedure does not in the majority of cases we see suffering from cancer of the cervix, give as good, if not better, results than a vaginal hysterectomy. In curettement for diagnostic purposes, I regret to say that my results have not been entirely satisfactory; we cannot always get a scraping from the diseased foci and besides the personal equation of the pathologist enters into it very largely. A man may be a good general pathologist and yet very inaccurate when he attempts to make a diagnosis from uterine scrapings; the pathological report should be only a contributing factor in the diagnosis, and the clinical history and examination should never be neglected, or its importance underestimated.

In septic conditions when the infection has passed through the endometrium into the muscle of the uterus, to the Fallopian tube or to the cellular tissue around the uterus, or has been carried by the lymphatics to the ovaries or elsewhere over the body, no appreciable benefit comes from the curettement, except to establish the diagnosis and to prove that the uterine cavity is free from all decomposing and septic material. This is the only way oftentimes, to distinguish between a sapraemia and septicaemia. It has been claimed by some that they have gotten good results from curetting the uterus in acute salpingitis. Pryor, among others, advocated it. I cannot agree with them and should much prefer not to curette in such cases, if I knew the uterine cavity was clean.

In endometritis, accompanying submucous fibroids, I have failed to see a curettement do any permanent good. It has been advocated as a method of stopping the hemorrhage (from which these cases often suffer profusely), and it has been claimed to have caused the fibroid to disappear. Dr. Noble's recent work upon fibroid tumors shows so conclusively and clearly the dangers from malignant degeneration in these tumors, that it would seem foolish to waste time upon a curettement, provided the woman's condition will permit a radical operation, and the size, position, rapidity of growth, etc., of the tumor demands it.

In gonorrheal endometritis I have gotten anything but satisfactory results from curetting the uterus and swabbing out the cavity with pure carbolic acid, tr. iodine, etc. I have now and then had a case which I thought was benefited by it, but they have been the rare exception and not the rule. Yet I continue to advocate this treatment, for I know of nothing better to do in those cases where the woman refuses a radical operation, and where

the symptoms and the apparent disease of the adnexa do not seem to be sufficiently grave to warrant a radical operation. I wish someone would tell us what is the best treatment for gonorrheal endometritis.

Chronic Endometritis.—Sims of New York has advocated a curettement and drainage of the uterus for such cases; he reports a number of successful cases so treated. I have never, I think, seen but one case benefited by this treatment, and shall, in the future, advocate a radical operation from the start. I have often seen a woman suffering from salpingitis, wonderfully improved temporarily, by rest in bed, hot douches, etc. However, when these patients get up and resume their usual occupation, the symptoms return and sooner or later they have to have a radical operation. In dysmenorrhea from pathological flexions, the result from a dilatation and curettement are good. Sterility may be cured and many of the symptoms from which the woman seeks relief are permanently alleviated. In dysmenorrhea from neurotic conditions, infantile uteri, uterine adhesions, disease of the adnexa, etc., and from general conditions, as pulmonary tuberculosis; cachexia, from malignant diseases; anemia; chlorosis, etc., harm, rather than good, follows the curettement; the less tinkering with the womb the better it is for the woman. Major operations upon the adnexa should be preceded by curettement of the uterus (unless there is some contra-indication). I am thoroughly convinced that both from a theoretical and a practical standpoint this is the proper surgical procedure and should be routinely carried out. We often find a unilateral salpingitis, and the tube and ovary of the opposite side apparently normal. We operate on the diseased side and allow the other to remain; later on we are called on (generally another surgeon is called on), to operate the second time for disease of the remaining tube and ovary. It seems to me that this can be prevented to a certain extent by the preliminary curettement; it may not cure the endometritis, but it may prevent the infection from going into the other tube. I agree fully with the statement made by the late Dr. Pryor, who says that the preliminary curettement lessens the leucorrhea, hemorrhage, backache, etc., which too often are the aftermath of major operations upon the pelvic organs. It certainly increases the time of the operation and adds to a certain extent to the dangers of infection, but it seems to me that by the use of rubber gloves we can minimize the danger of infection, and

that no stone should be left unturned at the time of operation which will add to the future comfort of our patients.

3722 WALNUT STREET.

REFERENCES.

- Emmet: Princ. and Practice of Gynecology.
 Penrose: Diseases of Women.
 Dudley: Diseases of Women.
 Kelly: Operative Gynecology.
 Montgomery: Text Book of Gynecology.
 Munde: Minor Surgical Gynecology.
 Vanderveer: (Pittsburgh Med. Review, 1892, VI., 321).
 Harrison: (N. Y. Med Jour., 1884, XL., 696).
 Burrage: (Boston Medical and Surg. Journal).
 Williams: (Clin. Jour., London, 1892, 3—1, 8 10).
 Pryor: (N. Y. Jour. Gyn. & Obst., 1892, ii. 95).
 Jackson: (Ann. Gyn. Boston, 1887, 8, 311).
 Sims (H. M.): (Internat. J. Surg. N. Y., 1892, V. 151.)
 Currier: (Gaillard's M. J., N. Y., 1889, xlviii, 323).
 M. Bouran: (DuCurage dans l'Endométrie du Corps de l'Utérus).

PAUL PORTAL, HIS LIFE AND TREATISE ON OBSTETRICS, WITH REFLECTIONS ON THE SCIENCE OF THE OBSTETRICAL ART IN FRANCE FROM THE RENAISSANCE TO THE 18TH CENTURY.

BY
 CHARLES GREENE CUMSTON, M.D.,

Boston, Mass.

IN considering the state of early obstetrics in France it is useless to consult the writings of Guy de Chauliac, since he only repeats what the writers of the Greco-Roman period have written on the art of obstetrics, but at the time of the Renaissance this branch of medicine made immense progress. Podalic version, indicated by Celsus, but completely forgotten during the long night of the Middle Ages, was brought to light by Ambroise Paré, and the celebrated work from the pen of Rousset entitled "Hystérotomotoquie" caused the Cesarean operation, which formerly had been done only on the cadaver, to be performed on living women. From this time the science of obstetrics entered a truly scientific path and little by little rid itself of the old errors, and although its position at this time may seem miserable from the modern point of view, it cannot be denied that most important

changes had taken place. Obstetrics was still closely united to Hippocratic tradition during the entire first half of the 17th century until the excellent treatise on accouchements by Mauriceau broke this continuity and delivered forever this science from its fetters.

This great revolution had been prepared for and was seconded by excellent writings by several French accoucheurs of this epoch, who, although they may not have possessed the genius of Mauriceau, nevertheless rendered brilliant services to the art they practiced. In order to better understand the merits as well as the errors of the older authorities, I give a brief account of the condition of obstetrics in France from the time of the epoch-making treatise on surgery by Paré to the time of the publication of Mauriceau's treatise on labor. The chapters that Paré wrote on the practice of obstetrics in his immortal treatise are limited, but they possess a capital importance. We will not refer to what he has said relative to generation, because that was textually borrowed from the ancients, principally from the Galenic writings. He made, however, a great advance in the symptomatology of pregnancy, the subjective phenomena of which he describes accurately and at considerable length. Thus he describes clearly the pigmentation of the face, the condition of the breasts, the nervous disturbances, the uncontrollable tendency to sleep, the digestive disorders, toothache, salivation, congestion of the external genitals and varices.

Natural labor is studied in a most summary way for the reason that the great revolution in the customs which was to take place fifty years later had not as yet been accomplished. As in Greco-Roman antiquity, surgeons were called only in cases of extreme urgency and consequently they were summoned only to cases of difficult labor. On the other hand, Paré points out the principal obstacles which may complicate labor and indicates the means of overcoming them. Without speaking of podalic version, which he brought back into practice, as I have already pointed out, he made use, perhaps too frequent use, of the *crochet*, several examples of which are to be found figured in his work. He also employed the *embryotome* quite frequently, according to the practice of the ancient obstetricians; his own instrument consisted of a knife with a pointed end. He was a partisan of immediate delivery and he also describes puerperal hemorrhage and some of the infectious complications met with after labor. Like all the writers of the Greco-Roman period, he attributed these to

the retention or corruption of the lochia, to which he gave the name of "vidanges."

During the first few years of the 17th century there appeared a number of works of unequal value, one by Guillemeau and another by a surgeon of Angers, who wrote anonymously. Guillemeau fell far below his master, Paré; he did not possess the same piercing genius and the clinical good sense and it becomes evident in reading his work that, although he was the student of the true founder of French surgery, he had also followed the lectures of the doctor regents of the Faculty of Medicine of Paris, Gourmelin and Courtain. Like them, he made immoderate use of erudition and wrote numerous pages of his treatise full of useless repetition of the ancient doctrines of the Greeks, and their poor imitators, the Arabians. It would have been better had he given himself up to a healthy criticism of facts. Occasionally he lent a too attentive ear to the ignorant sayings of the matrons and sages-femmes, but one should not too greatly exaggerate this fault. These defects were in greater part those of his time, and very frequently, it must be recognized, he was inspired by the traditions of his learned master. Thus he studied in quite a complete way all those cases which can give rise to a hindrance during labor, and there are quite a large number of interesting cases reported from which his successors were able to profit greatly. To sum up, it may be said that the greatest criticism that can be made of Guillemeau is that he lacked originality. He rendered very great service to the progress of the art by continuing and popularizing the work of the great man whose student he had the honor to be.

The "*Traité d'accouchement*" by the surgeon of Angers is the work of a good practitioner who had had experience and was a good observer, and consequently a number of interesting remarks are to be found in its pages. However, the work contained nothing original and appears not to have exercised any very appreciable influence upon his contemporaries.

Quite the contrary is the very admirable work by Mauriceau, because he knew how to develop the ideas which were merely in embryo in the mind of Ambroise Paré, and because his eminently clinical genius discovered a multitude of new facts, which neither his predecessors, nor his contemporaries, had been able to perceive. Although he did not give any very special attention to the pelvis from the surgical point of view, one finds in the numerous cases which form the second part of his treatise very distinct principles of deformed pelvis, especially cases which unfortunately

caused him to reject the purchase of the forceps that Hugh Chamberlin wished to sell him. His researches of the soft parts, although they are not equal to those which relate to the practice of obstetrics, are certainly not without value and, in order to be convinced of this, one has merely to read his description of the gravid uterus. Mauriceau in fact was the first to show that the uterus became thinned instead of thickened during pregnancy, as Aranzi upheld, but, if he criticised the illustrious Italian anatomist on this special point, he knew how to utilize what this author had said regarding the placenta and he followed him even a little too faithfully when speaking of the urachus and the allantois. The disposition of the fundus uteri and its lower segment, the unequal development of its two lateral halves, its obliquity and torsion are very well studied. He partially developed a theory of the causes of labor which Puzos completed at a later date; he admitted that the distention of the uterus having attained its maximum, the cervix opened and, from this fact, became more and more incapable of bearing the weight of the child, so that the latter finished by making its escape outward. This is one of the first theories which attributed the end of pregnancy to the changes which take place in the cervix. In point of fact, Mauriceau was in no way dupe to the Hippocratic theory which attributed labor to efforts made by the child to escape from the uterus. Like Galen, he had been struck by the fact that many fetuses expelled appear in this world in a condition of death which certainly dates back several weeks. By reason of his foresight as a physiologist he appreciated that which Galen had guessed.

Pregnancy had been well written upon by this author, who had done away with a great number of errors transmitted from century to century and which were upheld by the honored name of Hippocrates. He also took little stock in the famous flat abdomen upon which matrons of this time laid so much stress; he demonstrated that the absence of menstruation and tumefaction of the abdomen are not absolute signs of pregnancy, and lastly it may be said that he certainly was the first to write an essay of some value on the pathology of pregnancy. This he has described with far more completeness and with far more rationality of mind than had been done before. Convulsions, varix, vomiting of pregnancy, and edema from renal lesions are discussed by him in a way which would make the modern obstetrician marvel. The essay of Guillemeau is, by contrast, so full of uncertain detail and of a credulity so blind that it is not even comparable to antiquity.

Antiquity had left precious material relative to the description of the organs of generation. Empedocles, Democrites, and especially Diocles, had commenced the study of this subject. Diocles had recognized the prolongations of the body of the uterus and compared them to animals' horns, but he overlooked the important details. It would seem that Herophilus and Erasistratis cannot be charged with the same fault. Galen recognized their researches, stating that they had been done on women more than on female animals. By the loss of their writings we are deprived of many curious details; however, an echo of their discoveries is to be found in Galen's writings and in the works of Soranus. The latter composed a work on the diseases of women, in which the principal facts relative to labor and dystocia are described, as well as some anatomical details of the female genitals. The description of the uterus appears to be more that of the human organ than what is found in Galen. It has been, perhaps, hastily thought that Soranus dissected female bodies, but it has also been held that he simply borrowed from the writings of the Alexandrians and, in point of fact, the famous treatise by his copyist, Coelius Aurelianus, entitled "*de Morbis acutis et chronicis*," does not prove that Soranus had any very great knowledge of anatomy and surgery. The dissection of human bodies must have been a very difficult matter in Rome during the second century.

In the description that Galen has given of the genital organs of woman, the traditional knowledge furnished by his predecessors and that which was obtained by his own researches are intermingled. Galen's erudition was great and his ardor for work incomparable. A great physiologist, anatomist, clinician and philosopher, his merit was highly estimated by his contemporaries. His description of the uterus is erroneous, inasmuch as it frequently relates to that of the dog, goat, or sheep, but he thoroughly understands the distinction of the corpus and cervix and the mechanism of labor, which he compares to that of the fecal mass. He removes from the fetus its active rôle in labor. He gives an excellent detailed description of the vessels and of the relationship, structure, form and size of the uterus. Led astray by his dissection of ruminants, he believed that the allantois was present up to the time of labor, but he described the amnion and chorion perfectly.

Many centuries passed before a worthy successor of Galen appeared. In the middle of the 12th century, while the rest of Europe was plunged in the darkest barbarism, there took place

at the Court of Frederic II of Hohenstaufen, an anatomical renaissance, of which Mundinus was the central figure. He had the opportunity to dissect several female bodies immediately after gestation, thanks to an edict of Frederic, and he repeated what had already probably been indicated by the Alexandrians, that the uterus was bicornate and possessed a single cavity. He was the one who compared the cervix to the mouth of a tench. Gabriel de Zerbis, Achillini and Béranger de Carpi made improvements on the descriptions left by Mundinus, but Vesalius did not have the same influence on this chapter of anatomy. He lost much time in noisily triumphing over certain errors committed by Galen and in proving that his descriptions referred to the uterus of the sheep, dog, goat, etc. However, he gave an excellent resumé of the researches of his Italian predecessors. His students, Fallopius and Columbus, made greater progress in the anatomy of the female genital organs, especially Fallopius, who found the prolongations of the uterus, which still bear his name.

It was certainly Aranzi, of all the students of Vesalius, who rendered the greatest services. In a very small book, entitled "*de Formatione foetu*," he described most admirably the ligaments, relationship, vessels and structure of the gravid uterus. He denied the existence of the allantois, and demonstrated that the fetal circulation was independent of the maternal. On this account the placenta was considered for many years as merely a purifying organ, intended to filter the maternal blood falling into its cavities, and to deliver it afterward to the fetus.

Fabrice d'Aquapendente and Harvey made most interesting researches on this subject, and improved upon the work of Aranzi. Pineau showed that the hymen was in nowise an être de raison, and he proved undeniably that for a certain time there is a separation of the pubic symphysis, a fact already mentioned by Paré.

Finally, two capital discoveries were made, which excited, with good reason, the admiration of Dionis. I refer to the discovery of the ovisacs in the ovary, which von Graaf erroneously mistook for real ova, and that of the spermatozoa, by Leuwenhoeck. From this time on the old theory of the union of the two semens was thoroughly shaken, but it was not overthrown until some time later. But the discussion of these anatomical details, extremely interesting from the standpoint of pure science, led to the neglect of the science of obstetrics. For example, the external characteristics of the pelvis and the bones composing it were known, but a description of its cavity was not undertaken. Its axis and diam-

eters were ignored. All that was known was that the female pelvis was flatter and broader than that of the male.

Deventer gave the first description of flat pelvis. The contemporaries of Paré, Guillemeau and others, were not entirely ignorant of the fact that the pelvis might be deformed and give rise to very severe obstacles during labor, but it is an interesting fact that it was not to the promontory that the malformation was attributed. They believed that it was the pubic symphysis which was at fault, and imagined that it was flatter than normally. From this idea arose the term of barred pelvis, which was referred to by surgeons of the epoch, in order to explain certain difficult labors. Paré tells us that in Italy the pubes of women were broken, so that this bone would not be a hindrance to labor, and Pineau and others singularly exaggerated the relaxation of the pubic symphysis, to which they attributed a great part in the mechanism of the expulsion of the fetus.

The vagina was still generally considered as the cervix uteri, and the true cervix was looked upon as the internal os, while the vulvar orifice was termed "couronnement" by the midwives.

In order to lessen the absolute ignorance of these women relative to anatomy, an ordinance was issued by the Châtelet directing that all the midwives on the list of the senior surgeon of this prison should be notified each time that a dissection of a female body was to be made at Saint Côme.

The symptomatology of pregnancy was almost entirely based on subjective phenomena. Of the objective signs, one alone was known, the active movements of the child. The other symptoms of pregnancy were hardly mentioned except in Mauriceau's work. Much importance was attached to the phenomena accompanying the act of coitus, as in the works of Hippocrates. In Littré's translation of the volume on the Flesh, the following passage occurs. "Une femme qui a de l'expérience reconnaît ainsi quand elle a concu. Elle éprouve aussitôt du frisson, de la chaleur, des grincements de dents, des spasmes." Paré makes the statement that women are warned of their pregnancy when they feel "un petit frisson et horripilation ou hérissonnement en tout le corps, et telle chose se fait à cause que la matrice se comprime et son orifice se clôt pour retinir les semences," and Guillemeau writes as follows: "Aussi qu'en même temps il lui soit survenu comme un baillement, allongement et frémissement en dedans, tel que nous sentons à la fin de pisser, lequel se soit communiqué par tout

épaules et dos, avec petite douleur autour du nombril et brouillement au petit ventre, ce qui advient à raison que son amary se remasse en soi pour retenir la semence qu'elle a attirée et succée, y ressentant quelque petit chatouillement."

Mauriceau believed that this opinion might be upheld. There certainly is some little truth connected with it, but it has been greatly exaggerated. He says that conception has taken place "si l'homme et la femme ont senti pour lors un plaisir plus grand qu'à l'ordinaire, ce qui arrive à l'homme, parce que dans ce temps le vagin a serré davantage sa verge à cause que la matrice qui, s'ouvre pour recevoir la semence succe en quelque sorte le bout du membre viril qui, pour être doué d'un membre exquis, en est fort agréablement chatouillé et vanant elle-même à recevoir les deux semences dont elle est friande, et principalement de celle de l'homme, elle cause à la femme un tressaillement voluptueux et extraordinaire de toutes les parties de son corps.

. . . Néanmoins, j'ai vu beaucoup de femmes grosses qui m'ont assuré avoir conçu sans s'en être aperçu, par les sentiments de volupté qui arrivent ordinairement dans l'émission de la semence." There was also the famous sign indicated by Hippocrates, namely, the retention of the male semen.

The desire to sleep was regarded as of certain symptomatic importance, and is thus mentioned by Paré: "La femme saura qu'elle a conçu si elle est forte endormie et si la compagnie de l'homme ne lui plaît comme auparavant." The writers who followed, excepting Mauriceau, did not insist upon this phenomenon, which, nevertheless, is interesting and rarely is wanting. The expression of the face was also a point of much importance with the ancients, and Hippocrates says that if one is desirous of knowing whether a woman is pregnant, one should look at her eyes. This sign is also admitted by Paré and Guillemeau goes a step further. Mauriceau says "Les paupières sont molasses et ont de la peine à se soutenir; elles sont fort obscures et il se voit tout autour un cercle d'un jaune livide; elle a les yeux battus, enfoncé; leur blanc est troublé et leur regard est languissant."

The changes in the cervix were also poorly studied and only the closure of the internal os was mentioned. The ancients knew that, in spite of the enormous size of the uterus, the cervix remained closed and Paré admitted this, but not absolutely, as is seen by the following quotations from his writings: "Les anciens ont laissé par écrit que la bouche de la matrice des femmes encientes était tant serrée que depuis la conception

jusque' à l'accouchement, la pointe d'un poinçon n'y saurait entrer. Toutefois on peut montrer que le contraire est véritable, témoin la superfétation qui ne pourrait s'accomplir si la matrice ne s'ouvrait." He also mentions the discharge of water and blood from the cervix, which is occasionally observed during pregnancy. Guillemeau upholds the ancient idea, while Mauriceau admits the closure of the cervix, but at the same time making the following remark: "La matrice peut être exactement fermée sans que la femme ait conçu; il s'en trouve qui ne s'entrouvrent presque jamais pour laisser passer les menstrues, et Galien remarque très bien au commentaire des Aphorismes que la clôture de l'orifice interne est un signe commun à la grossesse et aux tumeurs contre nature."

Not a word is said relative to the changes in the consistency of the cervix, and some authors even went so far as to state that the organ becomes very hard. Like Paré, all the authors of this epoch contributed a great importance to the changes in character occurring in pregnant women.

The importance of changes in the abdomen, known in all times, was exaggerated by the midwives. Hippocrates, however, had already said that in order that suppression of the menstruation should signify anything there must be absence of fever and malaise. Paré and Guillemeau had recalled the sources of error which might result from a blind confidence in the mere progressive increase in the size of the abdomen, because they were fully aware that the various abdominal tumors may give rise to an enormous development of the abdomen. Mauriceau rendered great service by particularly drawing the attention of practitioners to this point.

With such poor diagnostic means it is not at all astonishing that surgeons frequently made mistakes relative to the existence of pregnancy, which, at the present time appear very ridiculous.

The school of Hippocrates adopting an idea, which, it appears, dates back to Pythagoras, admitted a pregnancy of seven to nine months. While they were not at all ignorant of the fact that the exact term could not be rigorously fixed, they were fully aware that gestation could not go beyond the tenth month. Paré, in a rather confused chapter, recalls that the ancients were of the opinion that pregnancy lasted nine months, but contrary to Hippocrates he admitted with Aristotle that children were viable from the eighth month on. Mauriceau, who believed in nine months' pregnancy, made the following important remark: "J'avoue bien que le terme de la portée des enfants est

de 9 mois pleins, mais je ne puis pas demeurer d'accord que ceux qui naissent au 7e mois, vivent plutôt que ceux qui viennent au 8e, car au contraire j'ai toujours connu par expérience qu'ils sont d'autant plus robustes qu'il approchent du terme le plus naturel qui est celui de 9 mois." He explains that pregnancies apparently of ten and eleven months are due to the fact that the women had become pregnant at the end of two or three months of suppression of the menstruation, this absence being due to other causes than pregnancy. Little need be said regarding normal labor as it was understood by the obstetricians of the 17th century. I would simply point out that all the practitioners of the period possessed of a certain professional skill had recognized the principles that labor should not be forced, but should be allowed to follow its natural progress as much as possible, and that it was useful to preserve the membranes intact. On the contrary, the mechanism of expulsion, properly speaking, was completely ignored, and all that one knew was that labor was divided into two stages, mainly dilatation of the cervix and expulsion of the child. The presentations were multiplied far beyond any practical necessity, the obstetricians not having as yet recognized that there are only three principal presentations, all others being simple varieties, since they always end by transforming into one of the three. In order to allow the practitioner to recognize them the principal treatises of the epoch, those of Viardel, Mauriceau, Peu and Dionis contain a chapter given up to the anatomical particularities which characterize the various fetal parts.

Cases of dystocia were very frequent during the 17th century, because the midwives attended all natural confinements and were possessed of an ignorance which was only equaled by their vanity. The state had taken some measures to control their practice and an ordinance of the Châtelet, dated April 26, 1587, established the following rules:

"Que lorsqu'il y aura une femme ou une fille qui désirera être recue sage femme en cette dite ville et faubourgs d'icelle, autant que ce faire, feront annonce de leur demeure, de leur ville, conservation vertueuse, et sous quelle maîtresse ou mère elles auront appris l'état de sage-femme et ce par écrit ou verbalement, ou par personnes ou femmes d'honneur. Et la mort avenant de l'un des deux jurés du Châtelet ne pourront, le médecin ni les deux chirurgiens du roi en présenter qui n'aient été de long-

temps reçues et prêté le serment ainsi qui sera dit, et comme on a coutume de faire.

“Qu’elles seront tenues de se faire interroger par le médecin et les deux chirurgiens jurés du roi au Châtelet, de Paris, et les deux matrones jurés du Châtelet, mandées par ces médecins et deux chirurgiens jurés du roi audit Châtelet.

“Qu’étant examinées elles seront tenues de faire porter leur rapport, afin de prêter serment devant M. le Prévost, de Paris, ou M. le Lieutenant criminel sur ce au M. le Procureur du roi audit Châtelet, suivant la coutume.

“Seront tenues de retirer lettre dudit sieur Prévost de Paris, huit jours après le serment presté, du greffe criminel, et la faire signer du greffe dudit Châtelet et y faire apposer le sceau de la dite prévosté.”

These rules were generally void and the practice of obstetrics was marked by ignorance and carelessness. In the words of Peu :

“Je sais et je l’ai moi-même éprouvé, qu’il y a des accidents qu’on ne peut prévoir et d’autres qu’on ne saurait éviter, même après les avoir prévus. Je suis enfin persuadé qu’il y a des malheurs dignes qu’on les plaigne et des fautes qui méritent qu’on les pardonne. Mais aussi je ne puis dissimuler que l’ignorance, la rusticité, la suffisance et la témérité causent la plus grande partie des mauvais travaux ou après que nous avons fait tous nos efforts pour rétablir le désordre causé par les autres si nous manquons de succès, nous n’en rapportons que de blame, comme si c’était un crime pour nous de n’avoir pu réparer les fautes d’autrui, qui souvent même nous sont imputées.

“Qu’un enfant présente le bras fort avancé au passage, une sage-femme judicieuse et prudente, qui ne se sent pas assez d’expérience pour se tirer d’un tel pas, commence par demander du secours et se contente de tenir cependant le bras enveloppé dans des lignes trempés dans de l’eau-de-vin ou du vin chaud pour le fortifier et pour empêcher que l’air ne l’altère. Mais combien d’autres fières et présomptueuses, dans Paris, à la campagne, stupides et grossières, essaient d’abord de le tirer à force de bras, s’imaginant que le reste du corps suivra, ne voyant pas que c’est vouloir faire passer par une fente étroite une pièce de bois en travers.”

Faithful to Hippocratic tradition the obstetricians considered as abnormal every presentation excepting that of the head, although presentation of the feet was not looked upon with such abject horror as some of the others. The following quotation

from Paré is of interest: "Or l'enfantement naturel est quand la tête vient la première et suit ses eaux, l'autre qui est moins bon et facile est quand il vient les pieds devant; tous les autres sont très difficiles." He consequently advises having recourse to version.

The crotchet and embryotomes were more frequently used than they were at a later date, thanks to the improvement in the technique of version. As Mauquest de la Motte tells us many used the crotchet without reason at the beginning of the 18th century, and, consequently, very serious accidents resulted. On the other hand podalic version undertaken under improper conditions only too frequently ended in rupture of the uterus or detachment of the child's head. It should be recalled that very diverging opinions reigned regarding the delivery of the placenta and most practitioners, like Mauriceau, interfered immediately, for fear that the internal os might close down. The Cesarean operation on the living was generally condemned.

After this rambling introduction, let us consider the subject of this paper. Paul Portal, who was born at Montpellier. The date of his birth may be fixed approximately as 1630, since in order to be admitted to the Hôtel-Dieu students were required to be over 18 years of age, and Portal entered there in 1650. He commenced his surgical studies in his own city, but Paris attracted him and he went there at an early date to finish his education. He attended the lectures of the Faculty and those of Pierre Moreau at the College of France. A mention of his stay at the Hôtel-Dieu is made in the deliberations of the Bureau of March 7, 1657, but he had then worked in this institution for a number of years. He himself gives 1653 as the date; but we must believe that he entered there even earlier, in 1650, very probably, because he left in 1663, and he makes the statement in his book that he had attended Moriceau's lectures for thirteen years. Portal soon took part in the competitive examination for the position of first companion surgeon, and on March 7, 1657, he was nominated: "Lecture faite des actes qui concernent l'examen des garçons chirurgiens qui se sont présentés pour être admis en la place du défunt Angot, ensemble de l'avis donné par écrit par les médecins de l'Hôtel-Dieu, rapport fait de l'avis donné de vive voix par les chirurgiens et examinateurs, l'affaire mise en délibération, la compagnie a arrêté que Claude Porl, l'un des dits garçons chirurgiens, et qui est trouvé le plus

propre, sera reçu pour servir et assister, panser et médicamenter les malades dudit Hôtel-Dieu, en qualité de premier compagnon chirurgien d'icelui au lieu dudit défunt Angot, sous la charge et conduite du sieur Petit, maître chirurgien de l'Hôtel-Dieu, pour après six années de service, être reçu maître chirurgien en cette ville de Paris." From this time on he was to play an important part. His first duty was to perform the autopsies and dissections, as will be seen from the following extracts taken from the records of the hospital :

"M. Forne a rapporté au bureau que, suivant la délibération du 14 du présent moi, le sieur Capon et la dame Moreau l'ayant adverti qu'il y avait une femme morte à l'Hôtel-Dieu, sur laquelle on pouvait faire commodément anatomie et dissection de la matrice, il y a donné la permission par son billet audit Portal, lequel fait difficulté d'y travailler, pour les raisons qui ont été rapportées au bureau, sur quoi la compagnie a arrêté que le dit Portal exécutera l'ordre du dit sieur Forne comme étant celui du bureau." (Délibér. du 21 novembre, 1657.)

"La compagnie a donné ordre au sieur Portal de faire ouverture du corps de Jeanne Moulin, femme grosse, morte à l'Hôtel-Dieu, en travail d'enfant, après trois jours de travail, ce qu'il fera en présence du médecin ordinaire de l'office des accouchées au moins, de la sage-femme et de celle qui est à présent apprentisse en non autrement." (Délibér. du 19 novembre, 1857.)

The next year, September 6, 1658, Lanier, "principal operator for stone," asked the authorities to allow Portal to assist him. Lanier, overworked, had become somewhat suspected of having wished on a certain day to use a new instrument of his own invention; he had tried it on two old men without having been able to accomplish the operation, "although he kept each one on the table for a half hour." A member of the bureau by name Perrichon, who was present, was obliged to intervene, and by a special deliberation it was decided that Lanier "ne pourrait se servir de son instrument nouveau sans un ordre particulier par écrit du bureau," and from this time on was to be seconded by Castagnet. When consulted Lanier declared that this choice did not appear a fortunate one to him, that he had seen him operate, and "qu'entre autres défauts, il en avait remarqué deux considérables; le premier, que la main lui tremblait, le second, qu'il tirait la pierre par secousses," that Castagnet was too old and "qu'il serait préférable de façonner ceux qui sont plus jeunes, tels que Portal, Allot et Girault, tous trois de la maison, et qui

promettent beaucoup en cet exercice." The bureau designated Ruffin, and Portal was obliged to wait, but in a few months he triumphed. In point of fact he, as first companion surgeon, had many times been called to aid the midwife in difficult labors. On January 15, 1659, the bureau confided in him the care of labors occurring in syphilitic women.

"M. Forne a dit qu'il se présente quelquefois à l'Hôtel-Dieu des femmes grosses qui sont malades de la grosse vérole, auxquelles la sage-femme n'ose et ne doit toucher pour les délivrer, de peur de gâter les autres femmes en couches, que l'on peut se servir pour les accoucher du sieur Portal qui a déjà quelque expérience en cela ; sur quoi M. Prereau a dit que si l'on est obligé de se servir chirurgien en cela, il est juste que le sieur Petit, maître chirurgien, y soit aussi employé, s'il le désire." (Délibér. du 15 janvier, 1659.)

Four months later, on May 4th, he operated in the lithotomy room. While he was to become distinguished in the science of obstetrics, as we shall see, he was less fortunate in his tentatives at the operation for stone. Several times he was declared incompetent, often by capable practitioners, whose sentence must have been particularly disagreeable. At this time the operation for stone was, perhaps, more than obstetrics, a specialty in which a few surgeons had made a great reputation in Paris. It was the only one at the Hôtel-Dieu that was not represented by an eminent operator, and the specialists of the city who were the most in vogue were called in preference to even the master surgeon, to operate on the cases which had been diagnosticated by the ordinary physicians. He was allowed to initiate the companion surgeons into the secrets of his art, according to the needs of the service, but only those whom the bureau approved. No one, however, could obtain permission to operate except in his presence. In spite of these precautions, the mortality was not less than 20 per cent. The operator was obliged to work in public, under the control of his colleagues, who were usually antagonistic physicians, or very ignorant members of the bureau. On May 4, 1659, Portal, who was only a beginner, and Blondel, dean of election of the Faculty of Paris, had been designated to watch him operate. The attempt was not a fortunate one, because the latter stated that his hand trembled and that he was awkward. One month later, on June 6th, Lanier declared that he would no longer operate with the assistance of Castagnet and Portal, who were, he declared, in no way fitted for this operation. In order to give

more weight to a decision that the bureau appeared little disposed to take into consideration, he handed in his resignation. Gouin, who was called on September 12th to take Lanier's place, declared that he would never consent to accept the service as long as Castagnet and Portal were retained there, that it was imprudent, given the evidence of their lack of knowledge, to allow them to operate, unless there was present some one possessing the requisite competence in the matter. On the first of October, however, Gouin withdrew his decision and entered the Hôtel-Dieu, and from this time on we lose all trace of Portal in the lithotomy room.

His specialty, however, was marked out for him, as he had already developed a decided taste for obstetrics. Designated since January 15, 1659, to deliver "spoilt" women, he was also as chief of the companions, called upon from time to time to help the midwife in difficult labors in the wards.

"Ledit sieur Forne a rapporté que le dixième du présent mois, il est arrivé un mauvais accouchement en la salle des accouchées, qui a obligé la sage-femme d'appeler du secours, et ont été mandés le sieur Castagnet, maître chirurgien à Paris, et les sieurs Petit et Portal, chirurgiens ordinaires, dudit Hôtel-Dieu, qui ont donné leur certificat de ce qui s'est passé audit accouchement mis au greffe du bureau par ledit sieur Forne." (Délibér. du 12 decembre, 1659.)

Finally, on February 4, 1660, he devoted three months to the regular service of the confinement cases. It was in this service, which was so greatly sought, as is proven by the testimony of Mauriceau, Peu and Dionis, that Portal could form himself, guided by the wise advice of Lacuisse and Bouchet, to which he refers as follows:

"Comme je l'ai remarqué en l'Hôtel-Dieu de cette ville, ou j'ai eu l'honneur de servir les pauvres malades pendant plusieurs années, en qualité de maître chirurgien, étant appuyé des conseils de défunt M. de Lacuisse, et de M. Bouchet son gendre, qui ne nous refusaient point cette charité pour les pauvres. Ils m'ont toujours honoré de leurs sages conseils, que j'ai suivis avec un heureux succès dans tous les accouchements que j'ai faits, et que je fais encore journellement. Et je puis dire que je fais gloire d'avoir appris de ces deux messieurs une bonne partie de ce que j'ai pu apprendre dans les accouchements; et assurément le public a beaucoup perdu en la personne de M. de Lacuisse, et perdra encore davantage en celle de notre illustre M. Bouchet."

The service was very imperfectly fitted out, and hygiene, among other things, was practically an unknown quantity. The obstetric service at the Hôtel-Dieu was carried out in what might be called the cellar, the lowest studded room in the building, having windows only on one side overlooking an arm of the Seine, which became dry in summer and at this point received a large number of drains, among them those coming from the water-closets of the Hôtel-Dieu. This room was soon given up, on account of the dampness, produced by the overflow of the river. Transported in 1660 into one of the rooms of the bridge, the accommodations soon became insufficient and, in order to overcome this, they used the old lithotomy room, called St. Joseph's Ward, where, in 1663, the obstetric service was finally established. One hundred years later Tenon stated that it was still there. The room was 72 meters long, 11 broad and $3\frac{1}{2}$ in height. The beds, of which there were small and large, were arranged in four rows, called the white row, which was near the window and therefore well lighted; the black row, which was against the wall on the other side of the room, and two intermediary rows, which also came into contact. In 1664 there was an average of from 80 to 100 pregnant women; in 1671 there were 250 and the condition of affairs had not changed. In February, 1660, there were four, five or even six women in the same bed. February 14, 1661, there were four, and both pregnant and delivered women were closely pressed together. In 1666 there were still three in one bed. This abuse was not confined to the obstetric service, as a deliberation, dated July 7, 1656, relative to the medical services amply attests: "*les malades expirent dans des lits ou il y en a deux ou trois autres couchées. . . . Souvent on tire de leurs lits ceux qui commencement à se bien porter, pour les mettre coucher avec d'autres fiévreux et grèvement malades.*"

This condition of affairs was not to disappear. Tenon speaks of 67 large beds and 39 small ones, which on January 12, 1780, still contained 193 women in labor, or in other words, the 18 large beds were each occupied by three patients. On unusually busy days there were sometimes four women in one bed, and nothing less than the Revolution was able to remedy the condition of affairs by creating the Maternity in the old Abbey of the Port-Royal, where it still exists at the present time.

There were no cribs for the babies, and all inmates, large and small, were indiscriminately huddled together. In the same bed one found the legitimate and virtuous wife with the corrupted

woman of the town, the delivered with the pregnant, the healthy with the diseased; only syphilitic women were placed in a room reserved for them. In less than eight months four babies were found asphyxiated in their mothers' beds, and it was only in 1662 that the bureau decided to have cribs. Tenon could still write, one hundred years later: "Enfin quand on entr'ouvre ces lits de souffrance, il en sort, comme d'un gouffre, des vapeurs humides, chaudes qui se répandent épaississent l'air, lui donnent un corps si sensible que le matin, en hiver, on le voit s'entr'ouvrir, a mesure qu'on le traverse, et on ne le traverse point sans un dégoût qu'il est impossible de summonter."

Infection must have been rampant in such a midst; and in point of fact we find ourselves in the most sinister days of puerperal fever, the epidemics succeeding one another with rapidity. 1662, 1663 and 1664 were dark days; the last year saw hundreds of victims. In the epidemic of 1746 only one woman in twenty survived; usually one in sixteen succumbed. Of an annual mean of 1300 babies born in the Hôtel-Dieu 400 died, especially from a fatal disease known under the name of "induration," or "gelée."

The obstetric service was under the direction of a nun, called "la dame des accouchées," who about fulfilled the part played by these persons at the present time, although endowed with a more extended power. Under her orders, and responsible for all labors and baptisms, was a mistress midwife, chosen from the professionals of the town and admitted after competitive examination, not without forgetting the influence which was brought to bear in her behalf exactly as is done in most hospitals at the present time. She must have been either married or a widow and a Roman Catholic. A mistress midwife was usually quite capable. She was assisted by apprentices, usually four in number. These she was obliged to instruct, and after a three months' stay in Hôtel-Dieu they were authorized to practice freely outside. During the first six weeks they merely looked on, while during the last six they operated under the direction of the mistress midwife. The latter also gave them lectures, under the control of the physicians of the Hôtel-Dieu, or even practical demonstrations on the cadaver of the anatomy of the genital organs. They were obliged to attend these lectures with great regularity, but, although this measure may appear excellent, it must be said that in reality the benefit was slight. The dissections took place only once in six weeks, in other words, only twice during the instruction of each apprentice. Escorted by her apprentices, the mis-

tress midwife was obliged to go through the wards at least twice a day. When night came she made a revision of all the beds, indicated to the apprentices those patients which should be put into the labor room and gave them such instructions concerning each patient as might seem necessary. To this service was attached a physician of the Hôtel-Dieu, who made a visit each morning and prescribed the regimen and medicines. Bleedings, which were always numerous, were done by one of the twelve companion surgeons designated by the bureau and chosen according to aptitude for working in the labor wards, without consideration of seniority.

The care of delivering syphilitic women also rested upon this companion surgeon, since the midwife was not allowed to attend these cases. In cases of difficult labor the midwife called upon the master surgeon of the Hôtel-Dieu, or, in his absence, upon his first companion surgeon. This rule, however, was not strict, and she was allowed to have recourse to any surgeon accoucheur in the town.

"Il y a en la salle des accouchées une femme en travail dont l'accouchement est difficile. La sage-femme a prié le sieur Castagnet pour l'aider, comme il a fait en plusieurs cas semblables; néanmoins ledit sieur Castagnet fait difficulté de travailler, n'en ayant pas la permission du bureau. Sur quoi, l'un des messieurs a dit qu'il est de conséquence d'introduire dans l'Hôtel-Dieu des chirurgiens du dehors et d'ailleurs, que cela est inutile, puisque l'on a un maître chirurgien dans la maison. Sur quoi a été ajouté que le dit sieur Portal est à présent admis en la salle des accouchées, qui peut aussi assister ladite femme en travail, et dans les autres accouchements difficiles qui arriveront; sur quoi, l'affaire mise en délibération, la compaigne a arrêté que ledit sieur Castagnet assistera la femme en travail et que le sieur Petit, maître chirurgien ordinaire de l'Hôtel-Dieu, s'y trouvera aussi pour contribuer de sa part au soulagement de ladite femme." (Délibération du 18 février, 1662.)

Two days later the bureau designated Castagnet and Petit to aid the midwife in cases of difficult labor, and by a similar action Mauriceau and Peu were permitted to enter the service. The part played by the surgeons of the Hôtel-Dieu in the obstetric service was, as may be seen, extremely small. The staff and others connected with the hospital were not always on the most friendly terms; the mistress midwife quarreled with the nun and she could not conceal her modesty from the surgeons upon seeing

men engaged in the service of women in labor; physicians and surgeons looked at each other with disdain and suspicion and everyone was subject to the reprimands of the bureau.

The service was open to any pregnant woman who had arrived at the last month of her gestation, whatever her origin, morality, or religion. Only "spoilt" women were refused an entrance until the last moment, and they were admitted when labor had begun. They were not given any assistance until, in 1785, Louis XVI authorized the construction of a special hospital for syphilitic pregnant women and children, for years known as the *hôpital du Midi* and at present the *hôpital Ricord*.

The labors were not all accomplished in the ward. As soon as labor began the patient was conducted to a special room, where she was delivered on a very small, low bed, placed in front of the fire. Each placenta was kept in a separate vase, so that on the next day it might be submitted to the inspection of the visiting physician. When labor was over the patient returned to her bed on foot and on the next morning she was obliged to rise at five o'clock so that the bed might be made. After 1658 the labor room was provided with a low chair destined for the transportation of the patient to her bed, and it was then decided that patients should not be allowed to get up during the first forty-eight hours.

About one hundred women a month were delivered at the *Hôtel-Dieu*. The duration of the post-partum in normal cases was 15 days; after this time all patients were discharged if their condition allowed it. Those who were without homes could go to the General Hospital. In reality the duration of the post-partum was very much longer, because pathological sequelæ were not at all infrequent and in point of fact the average term of each case was 35 days. Children born at the *Hôtel-Dieu*, if they did not become orphans, were very apt to be abandoned by their mothers, and the sisters of charity, seized with compassion, looked after them for a certain number of years, but soon being overburdened by the unceasingly increasing number, they were obliged to turn them over to the care of the State. In 1678 the General Hospital had a hospital for foundlings and, out of 1,503 infants born at the *Hôtel-Dieu* during this year, this new institution received 1,304.

The service of obstetrics was rigorously closed to outsiders, and no surgeon or physician of the city could enter either to learn the practice of obstetrics or to perfect himself in this branch. A few

administrators of the office of the Hôtel-Dieu, less rigorous than their colleagues, found themselves obliged, at the commencement of the 17th century, to create a more liberal condition by proposing to open an obstetric service to surgeons; but their good intention was overthrown by the great opposition of the nuns. A few exceptions, however, were made, but it was always in favor of some foreign practitioner who was highly recommended by his sovereign to the King of France, whose will, nevertheless, did not always succeed in overcoming the conditions. Mauquest de la Motte was obliged, in order to follow the service, to disguise himself as an apothecary and follow the physician during his visits. The ward was always kept closed and the dame des accouchées alone waited on the chief of the service and never left him. There was, it is true, a humane reason for this measure which was very bad for the progress of obstetrics, namely, the respect that one had for the pregnant woman. Her name was inscribed on a register, which was kept at the office and by a most laudable sentiment, an absolute rule was made never to divulge it to anybody under any pretext, "tant pour assurer la tranquillité des familles, que de peur de détourner les filles qui ont forfait à leur honneur de venir accoucher à l'Hôtel-Dieu, ce qui les pourrait porter à défaire leurs enfants, même avant qu'être nés."

As soon as he entered upon the service, Portal gained precious clinical knowledge and, when he left, he was highly esteemed, although nothing in the records would lead us to suppose that he was called back to the Hôtel-Dieu. In March, 1663, his six years being up according to the rule, he took the mastership and left the hospital much regretted by the Bureau, which recompensed his services and made him a donation dated March 21, 1663. "La compagnie a signé un certificat des services rendus pendant six années à l'Hôtel-Dieu par le sieur Portal, en qualité de premier compagnon chirurgien ordinaire gagnant sa maîtrise, et lui a aussi délivré ordonnance de cinquante livres, pour une année qui échévera au jour de Paques prochain, de la récompense des dits services qui lui est accordée annuellement outre ses gages." On March 28, 1663, the following record is found: "Le sieur Portal est venu au bureau prendre congé de la compagnie et la remercier de la grâce qu'elle lui a faite de le retenir au service des pauvres de l'Hôtel Dieu, et gagner sa maîtrise comme il a fait par un travail de six ans, suivant les privilèges de l'Hôtel-Dieu."

When once master surgeon he gave himself entirely to the practice of obstetrics, in which he rapidly acquired a very great

reputation, consoling himself for his departure from the hospital by writing notes on the interesting cases which came under his observation. He was obliged by illness to interrupt his practice from July, 1668, to February, 1671, when he published a small work on the case of a child having an extraordinary face. In 1683 he decided to publish his work on the practice of obstetrics. It is recorded that he was practicing in 1692, and he yet remained active up to the time of his death, on July 1, 1703.

Modest, he did not appear to have the same vogue as Mauriceau, nor did he receive the same honors that were given to Bouchet, who was called to the court. His clientèle was mostly persons in humble circumstances; occasionally, however, he had patients of better position. On one occasion he enjoyed the confidence of one of the greatest princes in Germany, who confided the care of his wife to him and, although he cared little for the title, he does not conceal his personal satisfaction in this particular case. Desirous of his own tranquillity he spoke ill of no one, and his name is never found connected with any professional controversy. He always spoke condescendingly of physicians, calling them "savants," a beautiful example which is not always followed even by men of great science. For one alone he showed himself severe; he never spoke of Viardel, who according to his way of thinking, was a theorist, excepting in terms of contempt. Occasionally, also, deploring the insufficiency in the instruction of midwives that he frequently noted, he addressed sharp reproach to some of them, but it was rather with the desire to be useful than to hurt them, and he took care in his introduction to point out that he intended no ill will.

A man must have been possessed of much virtue not to enter into controversy in the days in which he lived. Physicians and surgeons devoured each other and Guy Patin qualified the members of Saint-Cosme as "*ces laquais bottés, ces estafiers de Saint-Cosme, ces chiens grondants, cette superbe racaille.*" There was not an adept of St. Luke who did not recognize their right of wearing the robe and the bonnet for their pretended doctrine in surgery. The obstetricians were not tender towards each other, and many of them who had brains took malignant pleasure in employing them in ridiculing their colleagues. Frequently even wicked words were not suppressed, and Mauriceau acquired a great celebrity in this type of discourse; he said of Lacuisse "*qu'il avait coutume de s'endormir près de la femme en travail pour ne se réveiller qu'après la rupture de la poche des eaux.*" Re-

futing Viardel's theory regarding signs of death of the child in utero, he adds, "la notable erreur d'un auteur moderne, dont le livre mériterait plutôt d'être envoyé aux beurriers et aux épiciers de la Halle pour servir d'enveloppe à leurs marchandises, que d'être distribué au public à cause des dangereuses conséquences de ses mauvais préceptes, et de l'ignorance crasse de cet auteur, dont la méthode est pernicieuse."

He then goes on to say that: "Il pouvait être convaincu de grande ignorance, pour les raisons que j'ai alléguées; l'exemple qui suit, dont le seul récit est capable de donner de l'horreur, fait voir manifestement qu'il n'avait pas moins d'effronterie et de témérité que d'ignorance." The case was that of a poor woman, "qui mourut par les violences extraordinaires que ce téméraire auteur lui avait faites, durant deux heures entières, pour l'accoucher, avait tué son enfant vivant avec ses instruments et avait en même temps crevé et déchiré de tous côtés la matrice de la mère; ce qui avait été cause qu'elle mourut une heure ensuite; après qu'on eut vu le cruel traitement et les excessives violences inutilement faits à cette femme par ce même auteur, on appela Clément sur lequel il rejeta aussitôt effrontément sa faute à cause qu'il avait mis le dernier la main à l'œuvre." He says of Rousset: "Les histoires que nous rapporté ledit Rousset, en son enfantement césarien, n'ont pas eu d'autre origine que la rêverie, le caprice et l'imposture de son auteur."

And lastly, he attacked Lamotte, and especially Peu. Viardel, Lamotte and Peu did not admit Mauriceau's treatise and the latter even went so far as to criticise the tire-tête that he had invented and Mauriceau did not pardon him. In order to avenge himself, not content to miserably play on his name, he accused him of having falsified the larger number of his observations which he published in his book and pretended that he had not even delivered a single woman at the Hôtel Dieu. Peu, in order to defend himself, produced a series of certificates and made fun of Mauriceau for having stated that he himself had delivered 300 women at the Hôtel-Dieu in four months. "Vous, trois cents femmes en quatre mois, et moi pas une seule en dix années. Vous êtes un heureux mortel; mais prenez garde qu'après avoir diminué excessivement les choses à mon égard, on a droit de vous soupçonner de les grossir médiocrement en votre faveur. Je veux bien encore vous dire qu'on ajoute à ce témoignage, que dans le peu de temps vous travaillâtes à l'Hôtel-Dieu, votre humeur des lors impérieuse et suffisante au dernier point, vous fit faire tant de

fracas dans cette maison peu accoutumée au bruit, et qui est un asile de paix, qu'on vous pria de vous retirer bien vite."

Dionis has a much more witty mind, and he ridicules Mauriceau for proscribing conjugal duties in pregnant women during the last two months of pregnancy, and he says: "Mauriceau peut avoir fait ces observations par lui-même, n'ayant jamais pu avoir un seul enfant en quarante-six années de mariage. Pour moi qui a une femme qui a été grosse vingt fois, et qui m'a donné vingt enfants dont elle est accouchée à terme et heureusement, je suis persuadé que les caresses du mari ne gâtent rien." And lastly the following lines relative to midwives is not tender: "Il n'y a aujourd'hui que les femmes du plus bas état qui se mêlent d'accoucher, lesquelles étant élevées dans le misère, la crasse et l'ignorance, sont bien plus capables de déshonorer la profession que l'acquérir ces belles qualités d'adroites, d'intelligentes qu'on leur donne. Toutes les apprentisses que j'ai vues à l'Hotel-Dieu de Paris, pendent cinq ans que j'y ai travaillé, étaient toutes de très-bas lieu. C'est à se cacher d'être né d'une sage-femme." The question that Pitcairn put to Astruc, who had wished to intervene in a discussion between the Scotch professor and Hecquet relative to digestion and to pretend that defecation resulted from the efforts of the rectum alone, is worthy of terminating this list; Pitcairn replied, "has Astruc ever been to the water-closet?"

Portal did not enjoy these biting jokes; he respected others, or at least he rendered them justice by not referring to them. Public criticism alone must have occasionally been levied on him, because in several of his observations he shows some little disgust, although always with that good nature characteristic of him: "On m'a dit que cette dame avait dit, à ma louange, que cette défunte avait été bien accouchée; aussi est-elle grande en vertu et en mérite; et je lui suis redevable de son honnêteté, et de m'avoir rendu justice quoique je n'eusse pas l'honneur d'être connu d'elle, et dans une occasion où on voulait ternir ma réputation, parce qu'on lui avait fait entendre qu'il y avait eu de la faute dans l'accouchement. C'est ce qui me fait dire qu'on a beau faire, on ne fait jamais bien: quelque opération qu'on puisse faire, elle ne fait point d'éclat; mais bien tout le contraire, qu'une femme soit si bien accouchée qu'on le souhaitera, et qu'elle vienne à mourir, ce sera toujours la faute de celui ou de celle qui aura accouché la femme; tant la médisance a de l'empire sur la vérité. Que si en celle-ci il s'était trouvé seulement le moindre sang caillé collé aux membranes internes de la matrice,

j'aurais été accusé de l'avoir fait mourir, quoi qu'elle fût mourante avant que j'y eusse touché. C'est pour cette raison qu'on a vu des accoucheurs ne vouloir pas faire de telles opérations, de peur de ternir leur réputation. Mais en cela Dieu s'y trouve offensé, et le mépris qu'on peut faire à l'opérateur n'est qu'une fumée envers Dieu, qui est le protecteur des affligés et des innocents." Then elsewhere he says: "La conduite et le jugement sont fort nécessaires pour entreprendre de tels accouchements; car celui qui opère est souvent blâmé, quoiqu'il fasse le mieux qu'il lui est possible; et si celle-ci fût morte, on m'aurait accusé d'avoir eu trop de hardiesse et de témérité; mais ce n'est pas la seule que j'ai sauvée en cet état. Si cette femme avait été une grand dame, on l'aurait laissé mourir, parce qu'on aurait eu peur d'en avoir du blâme, si elle fût morte. Dans ces occasions, on ne doit pas avoir ces égards. Il faut premièrement regarder Dieu, et son prochain. Regarder Dieu, parce qu'il y selrait offensé, en laissant mourir une femme. Regarder son prochain, parce qu'il n'y aurait pas de la charité de laisser mourir une femme sans la secourir; et dans ces recontres, une femme est plus heureuse d'être pauvre que d'être riche: parce qu'aux pauvres on a plus de hardiesse et de liberté dans sa profession: et quoi qu'on puisse dire, je suis du sentiment de M. Bouillet, premier médecin de son altesse monseigneur le prince très habile homme, fort sage et très prudent, qui ayant été appelé pour consulter la malade dit qu'en pareille occasion, que la femme soit riche ou pauvre, il faut toujours suivre les règles de l'art, et faire sa profession en homme d'honneur, et laisser parler le monde."

An eminently conscientious practitioner, Portal was, above all, a clinician, willingly giving up old theories and drawing conclusions only after an examination of facts. One of his greatest merits was that he was the first to observe that in obstetrics, as in medicine, other form of instruction is equal to bedside teaching, and that he propagated these ideas by publishing cases which had been carefully studied.

It was in 1683, as is shown by the approbation of the King, of the Faculty of Medicine of Paris, and of the Master Surgeons, placed according to law at the commencement of the volume, that Portal, encouraged by his colleagues, decided to publish the most interesting observations that he had collected since 1663. Two years later, in 1665, appeared his "*Pratique des Accouchements*." Ornamented with a very beautiful portrait of the author dedicated "with much respect" by his "very humble and

very obedient servant," to Moreau, Councillor and Professor to the King, first physician to Madame la Dauphine, whose lectures Portal had followed for thirteen years at the Hôtel-Dieu and for which he professed a great admiration, the work comprising three hundred and eighty-six pages is divided into two parts of unequal importance. The first part of thirty-five pages is the treatise; while the second, of three hundred and thirty-three pages, is far more important and interesting. The reservation of this large portion for observations of cases shows the clinical character of the work. "Quelques-uns de mes amis, assez éclairés pour se connaître aux observations qui peuvent être de quelque utilité dans la pratique m'ont persuadé que les miennes pourraient instruire ceux et celles qui voudront se mêler des accouchements. Cela m'a engagé à les communiquer de bonne fois et jet ne me repentirai point de la résolution que l'on m'a fait prendre, si l'on me fait justice. Ce n'est ni le style, ni l'arrangement des mots qu'il faut considérer, je confesse que je n'ai point assez d'étude pour y réussir; c'est la matière à quoi je me suis principalement appliqué; et assurément, je n'ai rien dit que je n'ai fait et qui je ne sois encore en état de faire, quand l'occasion s'en présentera."

The treatise is divided into six chapters, namely, on natural labor, on what should be done in a labor occurring before the ordinary term, on what is to be done when the child is in a face presentation, on what is to be done when the feet of the child present or when it is a breech, on what should be done when the hand or the arm present, and, lastly, on what is to be done when divers parts present. The second part of the work is the result of his practice from October, 1664, one year and a half after leaving the Hôtel-Dieu, up to 1683, a practice interrupted two and a half years by ill-health, as Portal himself states in relating the twenty-sixth case.

This second part consists of a series of 81 cases in which are described without classification, or order of date, cases of dystocia that he observed. He mentions 7 cases of abortion, 1 of carcinoma uteri, 3 of eclampsia, 8 twin pregnancies, 2 cases of triplets, 1 of extrauterine gestation, 12 of serious hemorrhage, 1 of hydramanosis, 3 of puerperal infection, 1 of uterine inversion, 2 of hydatidiform moles, 2 monsters, 9 adherent placentas, 8 of placenta prævia, 20 shoulder presentations, 3 face presentations, 16 breech and 9 vertex presentations, 1 prolapsus uteri, and 31 instances of podalic version. Theory is voluntarily sacrificed to

practical teaching, and each observation terminates with precious advice to the practitioner as to the proper treatment of the case. Portal does not touch upon theory, although very rarely he is tempted to search for a scientific explanation of some phenomenon which arouses his curiosity. In these digressions he gives merely an outline of his idea and turns it over to the care of physicians that they may settle the question. He was not a writer, and one does not find those humorous sentences which Mauriceau willingly inserts in the pages of his book, as for example the following: "J'ai connu, un nommé M. Hébert, couvreur des bâtiments du Roi, qui était si bon couvreur que sa femme accoucha, il y a environ quarante-trois ans, de quatre enfants, tous vivants, en une seule fois; ce que sachant, Monseigneur le duc d'Orléans défunt, auprès duquel il était assez bien venu pour son humeur joviale, lui demanda, en présence de quantité de personnes de qualité, s'il était vrai qu'il fût si bon compagnon, que d'avoir fait à sa femme ces quatre enfants, tout d'un coup; il répondit qu'oui et qu'assurément il lui en eût fait une demidouzaine, si le pied ne lui eût point glissé, ce qui fit rire un chacun de la bonne façon."

There are none of those fine witticisms which relieve the reader and in which Dionis excelled, two of which I here quote: "On ne voit point les animaux se cacher pour s'accoupler; ils le font dans tous les endroits où ils se rencontrent: l'homme seul se dérobe aux yeux des autres, et il semble qu'il soit honteux de produire son semblable. Il n'en était pas de même dans l'antiquité, puisqu'en demandant à un philosophe ce qu'il faisait, il répondit fièrement, 'je plante un homme.' En effet, y a-t-il plus de mal à planter un homme qu'à planter un chou?" Here is another anecdote: "Madame d'Arnoton, femme d'un maître des requêtes, demeurant rue de Richelieu, accoucha, il y a huit ou dix ans, de trois filles. Monsieur d'Arnoton était à jouer dans son voisinage lorsqu'un laquais lui vint dire que madame était accouchée d'une fille; un quart d'heure après, il en vint un autre lui annoncer qu'elle était accouchée d'une seconde fille; et un autre quart d'heure ensuite, il vint un troisième laquais qui lui dit que madame venait d'accoucher d'une troisième fille; aussitôt en se levant brusquement, il pria les dames avec qui il jouait, de lui permettre d'aller chez lui pour empêcher sa femme d'en faire davantage."

In Portal's book nothing of this nature appears; his style is of the most extreme simplicity, without any pretension to ele-

gance and he above all endeavors to be clear in his meaning, He does not write, but rather relates. From time to time he employs a simile in order to better characterize his idea, and in this he is usually fortunate. For instance, he says "the child floats in the water like a fish in a reservoir," when speaking of a case of hydramnios. Sometimes, when more inspired, but also less clear, he writes more like the authors of his time. This is seen in the following description of the way in which the unruptured membranes act: "Ce qui m'obligea de faire ici une comparaison sur les vagues de la mer et de l'accouchement, sur ce que lorsque la mer est dans son calme, les vagues venant à flotter sur le sable, elles se retirent en même temps et le laissent presque à sec; de même qu'il arrive dans le mouvement de la douleur causée par l'agitation de la chaleur qui fait faire un gonflement à ces eaux, qui poussent contre les membranes, lesquelles poussées par icelles font l'ouverture des orifices et disposent la sortie pour l'enfantement."

What gives the charm to his descriptions of cases and makes them always interesting is their truth and the way in which each has been weighed and considered. An observer of rare talent, Portal shows himself an eminently conscientious clinician, who tells only of what he has seen and done, and severely blames the borrowed phraseology of Viardel.

He always affirms his confidence in the power of nature, usually capable of bringing through successfully the work that she has undertaken. He unceasingly advises temporizing and believes in interfering only for the purpose of aiding her when he feels that she is weakening. Does this mean that this work is a criterion, that it should teach all who are desirous of the truth? Every work necessitates a criticism, and in this, as in all others, there are omissions and even errors. The ephemeral conditions of this world fatally bring about an evolution of ideas, and the care that our successors take in criticising our work will always be the consecration of its merit. The great fault of Portal is that he is entirely oblivious of order; everything is confused, and the heading of a chapter is far from indicating infallibly the most interesting points that it contains.

(To be continued.)

CORRESPONDENCE.

FIBROIDS IN WOMEN UNDER THIRTY.

To the Editor of THE AMERICAN JOURNAL OF OBSTETRICS:

Dear Sir—In the February transactions of the New York Obstetrical Society printed in the April number of your JOURNAL, Dr. Wm. M. Polk, in speaking of fibroid tumors, said: "I think very few will go so far as to say that a women capable of bearing children, under the age of 30 years, should be subjected to the operation for the removal of the uterus because of the presence of fibroids in it." I was surprised at this statement because, although I have made no special study of the subject of age in fibroid tumors, from repeated clinical observation I have learned to rule out practically fibroid tumors in women under thirty, wherever it is a question of differential diagnosis. To confirm or disprove this impression I went over the last consecutive hundred cases in my records at the Mary Thompson Hospital, with the following results:

Between the ages of 30 and 35	18 cases.
" " " " 35 and 40	27 "
" " " " 40 and 45	30 "
" " " " 45 and 50	11 "
" " " " 50 and 60	12 "

One patient was 62 years old and one gave her age as 27 years. This last was a colored woman who looked much older. It is well known that colored people do not keep accurate record of their ages, and I feel that I would be justified in ruling out this case, but to be fair I have included it.

These statistics show only 19 per cent. of fibroid tumors under 35 years; 57 per cent. between 35 and 45 years; 18 per cent. between 45 and 55 years and 6 per cent. over 55 years, at the time of observation. Whatever the age may be when these tumors begin to grow it is evident that the clinical symptoms manifest themselves most actively between the ages of 35 and 45. It would be interesting to hear from others on this subject. I have not been able to find anything in the recent literature. I noticed in the discussion referred to that all the patients mentioned were over 34 years. Respectfully,

LUCY WAITE, M.D

Chicago, May 1, 1905.

TRANSACTIONS OF THE NEW YORK OBSTETRICAL SOCIETY.

Meeting of March 14, 1905.

The President, J. RIDDLE GOFFE, M.D., in the Chair.

FIBROSARCOMA OF OVARY.

DR. MALCOLM McLEAN.—The patient, a well-nourished young married woman, 25 years of age, presented herself on May 17, 1904, complaining of bloating and soreness of the abdomen, with a distinct point of tenderness in the region of the appendix vermiformis. Her menstruation and other functions were reported as being normal. She had never been pregnant. On external inspection the abdomen was found to be enlarged—as much as at the sixth month of pregnancy. There was exaggerated intestinal resonance over the whole anterior surface fading into dullness deep in the flanks. Change of posture seemed to indicate some fluid in the peritoneum.

Bi-manual abdomino-vaginal examination discovered the uterus somewhat enlarged, and with an outline as though the fundus might be that of a double uterus. The mass on the right side was as large as a medium-sized apple. Ovaries and tubes negative. The uterus was freely movable. A diagnosis of probable uterine fibroid was made and the patient asked to report for further examination a few weeks later.

She did not, however, present herself again until the 19th of November, six months subsequent to the first interview. Examination at that time showed remarkable change in the physical signs.

The abdomen was about as large as a 7½ months' pregnancy. The whole anterior surface was dull with epigastric resonance only. A large hard tumor could be felt distinctly occupying the whole of the lower abdomen, extending about two inches above the umbilicus. It was movable and carried the uterus with it in all its motions. On the left was a small tumor discovered in the pelvis by vaginal examination. The density of the large tumor, together with its apparently intimate association with the uterine fundus, made a diagnosis of subperitoneal or interstitial uterine fibroid probable. The smaller mass was supposed to be an ovarian cyst. The patient had had no disturbance of the menstrual function, except that it had grown more scanty of late. There was more tenderness of the abdomen than usual and the patient's health was not so good. Operation was declined until January 1905. On opening the abdomen about two quarts of yellow,

viscid fluid escaped. The peritoneum in front was very thick and roughened by what appeared to be tubercular nodes. The large tumor was soon discovered to be a solid tumor of the right ovary, and so attached by adhesions to the fundus uteri as to give the appearance of a large subperitoneal fibroid. In order to lift it out of the cavity the incision was extended two inches above the umbilicus. The ovarian artery was enormously enlarged. The tumor was removed without much difficulty, all vessels being ligated with catgut. The left ovary was cystic and as large as an orange, and was removed also. The abdomen was closed by through-and-through sutures of silkworm gut.

The patient had an unusually smooth and comfortable convalescence.

The tumor is a fibrosarcoma of the right ovary and is the second one occurring in my experience. The first one was presented by me to the Society on November 21, 1893, and was a cystosarcoma with comparatively little fibrous element in it. The present specimen is largely fibrous with various spaces occupied by round cell sarcomatous deposits.

The tumor when removed measured 25 inches in circumference.

TUBO-OVARIAN ABSCESS. HYSTERECTOMY, OTHER TUBE AND OVARY
HAVING BEEN REMOVED THROUGH THE VAGINA FIVE YEARS
PREVIOUSLY FOR PYOSALPINX.

DR. LE ROY BROWN.—This patient was first seen by me some five years ago at which time we were doing most of our work through the vagina. At that time I removed the left ovary and tube, the seat of a pyosalpinx. The right ovary and tube appeared to be normal.

I was asked to see her again in consultation in December, at which time the patient had much pain on the right side with an exudative mass in the same side of the pelvis. The temperature was 103. The history of the onset and the character of the pain caused me to anticipate the involvement of the appendix.

The abscess was evacuated through the vagina. The abdomen was then opened and the abscess sac, together with the uterus was removed. The appendix was not diseased, though involved in some of the adhesions.

The abscess sac had communicated with the larger intestine low in the pelvis. The closure of this opening was not satisfactory on account of the condition of the patient who was at this time practically pulseless. The rent was treated extraperitoneally by means of gauze drainage extending into the vagina.

The recovery of the patient was stormy. The gauze track has now contracted to that of a narrow sinus through which occasionally liquid stools escape. I anticipate its complete closure.

The jeopardizing of this patient's life through a serious secondary operation, in an effort to save the ovary and tube at the

first operation, will make me, in the future, hesitate to leave either, if one is the seat of purulent disease.

DOUBLE TUBO-OVARIAN ABSCESS. COMPLETE HYSTERECTOMY.

DR. LE ROY BROWN.—Patient, aged 33, mother of two children, was first seen by me in consultation in November, 1904. When seen, the patient had been having a temperature for a week with abdominal and pelvic tenderness. There was very little distention, and what was thought to be a reasonably good bi-manual examination could be made. The left tube was diseased—the right adnexa could not be felt.

The history obtained was that a month previous she had had a purulent vaginal discharge with great irritation of the bladder.

The patient was operated on at her residence. At the time of operation her temperature was 102.5. On opening the abdomen it was found that both tubes and ovaries were the seat of abscesses.

The right, which could not be felt through the abdomen, was high up and out of reach of the finger in a vaginal examination. Both abscesses were aspirated before the diseased organs were removed. A complete hysterectomy was done and drainage used.

Recovery was uninterrupted.

The case is reported on account of the presence of the disease of the right ovary and tube, which was not recognized until the patient was under the anesthetic.

TERATOMA.

DR. MALCOLM McLEAN.—The patient who gave birth to this monster in November last, was a married woman 26 years of age and of good physique. This was her first pregnancy, and was marked by an unusual amount of discomfort—chiefly soreness and tenderness of the uterine globe.

Labor proceeded normally with the occiput presenting until the head reached the floor of the pelvis, when the pains seemed to grow inefficient. But by a little extra effort the head was delivered and then there was great difficulty in making further progress. After the shoulders were delivered it was evident that there was something detaining the rest of the fetus within the canal. Palpation above showed that the uterus contained a considerable body of some sort—too large to be accounted for by a normal child. After a good deal of manipulation the rest of the passenger was delivered and the case was made clear by the appearances found. The teratomous mass was nearly as large as the whole child and evidences of hair, bones, etc., could be distinguished on its surface. It occupied or sprung from the pelvis and lower fourth of the child and was considerably larger in diameter than the head of the child. Unfortunately there were difficulties in the way of securing the specimen.

DR. JAMES N. WEST.—I should like to ask Dr. McLean what

the outcome was in the first case, a similar tumor having been removed by him in 1892.

DR. MALCOLM McLEAN.—In that case the woman lived for several years after the operation which was performed in 1893. Several years after that she was in good health and then I lost sight of her.

DR. A. B. TUCKER.—The question of the removal of both adnexa at the same time, recalls to my mind a case I had. This patient had a double pyosalpinx and both tubes and left ovary were removed through an abdominal incision; on the right side there was left sufficient ovarian tissue to allow the woman to menstruate until she had passed the menopause naturally. I assured the woman that there was no danger of her becoming pregnant again. Last summer Dr. Harrison, during my absence, delivered this woman of a ten pound living child. I believe that in those cases where we can find a healthy uterus and where we leave some ovarian tissue, the stump of the tube may become patulous and the woman become pregnant. The highest ambition of some women is to bear children and I believe in giving them every chance to do so.

SUDDEN ELEVATION OF TEMPERATURE DURING LABOR.

DR. HENRY C. COE.—Multipara, æt, 40 years, third pregnancy. During the latter part of the eighth month albumin and casts appeared in the urine and the amount of urea was diminished to 3 grms. to the liter. The patient was placed on a milk diet, with laxatives, diuretics, etc., but the appearance of headache, edema, and the evidences of edema led the reporter to induce labor two weeks before term. The lower uterine segment was packed with gauze under strict aseptic precautions and labor pains began within twenty-four hours. When the cervix was about fully dilated the patient had a violent rigor, and her temperature (rectal), rose to 104° F., her pulse being 130. The labor proceeded normally, and the patient was delivered spontaneously three hours later, her temperature then having declined to 101°. It became normal an hour later and the patient's subsequent convalescence was uneventful except for a sharp attack of sciatica, which was controlled by aspirin. The daily amount of urea soon reached normal and the casts disappeared, two liters of urine being secreted in twenty-four hours. Pelvic examination negative. No explanation for the chill and fever could be found. During the fourth week after delivery the patient had another sudden rise of temperature (without chill), which was thought to be due to the grip, but after fluctuating between 101° and 103° for two days, it dropped to normal and has there remained for the past ten days. Under a more liberal diet the last analysis of urine showed that the urea had again dropped to 3 gr. to the liter, though without any evidence of renal trouble.

The speaker desired to introduce a discussion of the following points:

- (1) The probable cause of the febrile phenomena during labor.
- (2) The significance of a low output of urea in the pregnant woman, especially in cases in which there are no toxic symptoms. Is this alone an indication for the induction of premature labor?

DR. E. B. CRAGIN.—I should like to know if there were found any pus cells in the urine, as I have seen similar symptoms in patients suffering from pyelitis.

DR. H. C. COE.—There were no evidences of any pyelitis.

DR. CRAGIN.—With regard to the small amount of urea we must all agree that small amounts of urea in the urine are occasionally met with and yet no symptoms are present which point to it. I remember one case in this city, who passed only 75 grains of urea a day, all through the last three months of pregnancy and with no untoward symptoms whatever; she went on to term. I had another case in Montclair, N. J.; this woman passed about 75 grains of urea a day and yet she had no trouble whatever, and went on to full term. One should bear in mind the influence that diet has on the excretion of urea; if a patient is on a milk diet, and takes a large amount of fluids, the amount of urea seems to be low. Furthermore, we find that normal pregnant women do not pass as much urea as we formerly supposed. Among 100 cases examined at the Sloane Maternity during the last month of pregnancy, the largest amount excreted was 300 grains a day, and anything between 250 and 300 grains we were lead to consider to be good. So that I think we must modify our ideas a little as to the amount of urea a woman should pass during the pregnant state. If a woman presents no toxemic symptoms when passing 50 to 75 grains of urea a day, I think it comparatively safe to allow her to go on to full term, but under careful observation.

DR. EGBERT H. GRANDIN.—It is not so much the amount of urea that is excreted, but the amount of urine the woman is passing in twenty-four hours that is important; that should be the index of value in forming our judgment as to whether we should interfere or not. A few years ago much more stress was laid on this than is at present. I remember several years ago being asked by an older practitioner in the city to deliver his daughter. The amount of urea excreted by her was only one and a half grains to the ounce, and I wrote him that I believed it was time to interfere. He wrote back and said: "I'll take care of the urea. You confine her." She was delivered normally at term, yet her daily output of urea was only 90 grains. During that same year I had some cases where the amount of urea passed was far below what was regarded as normal; in these I had to interfere to avoid eclamptic seizures. The daughter of the older practitioner was passing enough urine, while in the other cases the amount passed was insufficient. The point, therefore, is the urea

excreted with the amount of urine passed, taking into account, of course, the quality of the food ingested.

DR. W. S. STONE.—I have recently seen a severe case of toxemia of pregnancy in which the urea output was twice the normal amount.

THE PROPHYLAXIS AND TREATMENT OF PYOSALPINX.

DR. JAMES N. WEST read a paper on "The Prophylaxis and Treatment of Pyosalpinx." He said that he believed that if a disease were suddenly to make its appearance in our country which would affect men in a corresponding way to that in which pyosalpinx affects women, segregation and quarantine would be established, but being accustomed to it, we watched its progress, felicitating ourselves upon the fact that we may save the patient's life after the damage has been done. The profession should take up this disease and fight it as it has fought puerperal sepsis.

In an analysis of reports of many thousands of pathological examinations of tubal contents, he has arrived at the conclusion that $62\frac{1}{2}$ per cent. of the cases are caused by gonorrhea; 16 per cent. as the result of incomplete abortion, and the remaining $21\frac{1}{2}$ per cent. were of uncertain origin, a few undoubtedly arising from the pathogenic organisms conveyed to the tubes from other parts of the body, as tubercle bacilli, colon bacilli, bacillus lanceolatus, or other microorganisms. Some cases were due to the introduction of germs into the uterus by instrument or fingers. He said that from these figures we might assume that about $78\frac{1}{2}$ per cent. of the pyosalpinx cases are possibly preventable.

In regard to gonorrhea he wished to emphasize to the general practitioner and to the genitourinary specialist the fact that the slightest trace of gonorrhea was a bar to marriage, and that if the subject persisted in having marital relations, he was subjecting the victim to the danger of a foul infection, which entailed long continued suffering, sterility, and possibly death. The slightest inoculation of a woman should be taken seriously and treated most carefully and persistently until all traces of it have disappeared. In treating superficial infections he thought we should go further than the cervix. Dr. West had treated two cases by washing out the uterus through a cervical speculum with an alkaline solution and following this with a solution of nitrate of silver, 1-240. In both cases great care was taken first to establish the fact that the uterus was the seat of infection, by making a microscopical examination of the discharge under proper precautions. One of these cases showed no trace of the invasion two months after treatment. The other case he had lost sight of, but she was much improved when he had last seen her. He felt encouraged to try the treatment upon the next patient with a fresh gonorrheal invasion of the uterus. In addition to this the usual diatetic and hygienic measures suitable for such cases were carried out.

Opinion was much divided in respect to the treatment of abortion. He said that the evils of incomplete abortion as related to pyosalpinx had been forced upon his attention at his clinics, and he thought that in every case of inevitable abortion the patient should be operated upon. If the cervix was already dilated, the operation of emptying and cleaning out the uterus with a semi-dull curette or finger should be performed as soon as proper preparation of the patient could be made. If not dilated, the cervix and the top of the vagina might be packed with a 5 per cent. iodoform gauze, after thoroughly preparing the patient for this procedure, and then twelve hours later, or in less time, the operation might be performed. The bowels should be emptied and the usual preparations for any serious operation about the vagina made, the only exception being where hemorrhage made immediate operation necessary. After curetting, one should be assured that the uterus is emptied by passing the finger into it. It should be washed out with hot boiled water, with a teaspoonful of Churchill's tincture of iodine to a quart. If the hemorrhage made packing with gauze necessary, he used a strip of 5 per cent. iodoform gauze, squeezed out once in a 1-1,000 bichloride solution to wash out the excess of iodoform. The packing should be removed in twenty-four hours.

Cases of pyosalpinx caused by the introduction of dirty fingers or instruments, were absolutely preventable and inexcusable on the part of the operator.

In regard to treatment he said that when a patient presented herself to him, he first obtained a knowledge of the stage to which the disease had progressed. If the walls of the tubes and ovaries and the plastic material deposited about them had yielded to the destructive influence of the microorganism and had coalesced into a large abscess, the patient should be operated upon as soon as proper preparations could be made. If, however, the case was one of the acute and virulent ones, and examination showed that it was not a suitable case for vaginal incision and drainage, the patient should be placed in bed for observation and local treatment. In addition to the usual hygienic and dietetic measures, an icebag protected by one thickness of flannel, was placed over the lower part of the abdomen and maintained in position by a bandage of woolen material. Hot vaginal douches and rectal irrigations are made alternately every few hours. With this treatment there is as a rule no longer any necessity for the administration of anodynes. The inflammatory action is checked and the exudate often diminished. If the patient is not losing strength too rapidly, procrastination is, in a way, advantageous, for as the disease advances the microorganisms become less virulent. Delay is no longer advisable if the patient shows signs of failing or if the disease appears to assume a subacute or septic character. He thought that we should not wait more than a few days in any case after the discovery of the disease until we operate. The use of peroxide where pus has been spilled neutralizes the danger of

infection so that it is not necessary to allow the disease to run a long course.

Where a case presented one or more large abscesses impinging upon the cul-de-sac, he adopted the following procedure: With the patient in a lithotomy position and the vagina retracted with a weighted speculum, the cervix is seized with a double vulsellum forceps and drawn toward the pubes and an incision made in a crescentic shape about an inch and a quarter in length and about half an inch posterior to the cervix. The incision is continued upward in the axis of the pelvis until the abscess is well opened. Having then a free incision into the abscess it is thoroughly washed out with a 2 per cent. carbolic solution and through a return catheter. If thorough drainage is established and maintained for a sufficient length of time, a majority of such cases make a good recovery. He said that he sewed a self-retaining rubber catheter into the opening with a No. 2-10 day chromatic catgut and packed the interior of the cavity lightly with iodoform gauze, using one strip on each side of the catheter and bringing the ends into the vagina where they could be easily reached. This gauze was gradually drawn down, timing it so that it would be removed by the sixth day. By the time the catgut which retains the catheter is absorbed, the opening in the vaginal vault will have contracted so as to hold it in the desired position for any length of time. Five weeks was usually long enough. This treatment was adopted for pelvic abscess from other causes than tubal disease. He had used this method of drainage to drain double pus tubes by the vagina in three cases, in all of which the results were good. One case was a double pyosalpinx resulting from incomplete abortion. As she was desirous of having children he was disinclined to deprive her of the possibility. An incision was made in the vaginal vault into the cul-de-sac of Douglas; guided by the finger a long sharp pair of scissors was introduced into first one and then the other tube, evacuating the pus. Each tube was irrigated gently with 2 per cent. carbolic solution through a return irrigator, then a self-retaining catheter was introduced past the neck of the catheter into each tube and sewed to the vaginal vault with 10-day chromatic catgut and cut off just within the introitus of the vagina. The cul-de-sac was packed with gauze which was gradually removed as described above. This withdrawal was effected without disturbing the drainage tubes. These were left in place six weeks. This operation was performed two years ago and there has never been any return of the abscess. However, the patient has never conceived, although she enjoys excellent health. A second case in which this operation proved useful was that of a woman 36 years old, who had borne three children, the last eleven years ago. Examination showed a large mass in the lower part of the abdomen and pelvis. Her temperature was $102\frac{1}{2}^{\circ}$, pulse 110. In spite of treatment she grew steadily worse. Under ether the mass appeared so large and of such uncertain outline, that he doubted the diagnosis of

pyosalpinx. The uterus could not be mapped out. The mass extended from the cul-de-sac to the umbilicus and into the iliac regions on both sides. He made an incision through the vaginal vault. A pint of clear fluid gushed out. Higher up he could feel the ovaries and two large distended tubes. He determined to open the abdomen from above and do a radical operation. A three and one half inch incision was made, whereupon about a pint and a half of clear fluid gushed out. The walls of the cavity were formed by the abdominal wall and omentum in front and coils of intestines, uterus, tubes, and plastic material below and above. He evacuated the cyst and washed it out with one-half strength peroxide, and then with normal saline solution. The great extent of this inflammatory region and the firm character of the adhesions caused him to give up the idea of a radical operation, and with the guiding hand within the abdomen he incised the tubes through the vaginal incision, emptied and washed them out. The upper cyst was lightly packed with gauze and the abdominal wound closed, leaving a sufficient opening for drainage at the lower part. Each tube was packed with gauze from the vagina and another strip packed between them in the cyst cavity in the cul-de-sac, the three strips being brought into the vagina. These strips were gradually removed until by the tenth day none remained, when a self-retaining catheter was sewed in place in each tube. A week later the patient was allowed to get up and was sent home with the drainage tubes still in position. They were removed five weeks later. This woman is perfectly well, but Dr. West felt convinced that a radical operation would have resulted in her death. He generally removed the tubes, leaving one or both ovaries if possible. If the uterus was in a necrotic condition or badly injured in the course of operation, it was also removed. The drainage method described was only used in special cases.

His general plan of procedure was to incise the cul-de-sac if it seemed to be bulging with a large abscess, and to wash it out with a 2 per cent. carbolic solution; then the abdomen was opened and the tubes removed by clamping them off and tying the main vessels and sewing over the tops of the broad ligaments with a plain No. 2 catgut suture, and making a gauze drainage through the cul-de-sac into the vagina. If the tubes were in such a position as not to suggest a vaginal incision the abdominal opening was made at once. The intestines were freed from adhesions and the field for operation walled off with abdominal tape pads, the patient being in the Trendelenberg position. The table was then brought into a horizontal position and the tubes removed without rupture if possible. Vaginal drainage was always resorted to where there had been great traumatism, where pus had been spilt in the pelvic cavity, or where there was excessive oozing from ruptured adhesions. It was only in exceptional circumstances that drainage was made through the abdominal wall. He thought that in all cases where the tubes were to be removed this

should be done through the abdominal incision. He found that during the past year he had operated upon 13 cases. In 8 vaginal gauze drainage had been used; in two the ovaries and uterus had been removed as well as the tubes; in one pus had burrowed between the vagina and rectum and two openings were torn into the intestines in separating adhesions. Complications were dealt with as met. All cases recovered. In conclusion he made the following suggestions: (1) That all cases of abortion should be operated upon; (2) That all gonorrheal invasions should be fought from their start to their finish; (3) That the greatest aseptic precautions should be used whenever the uterus is entered either by instrument or fingers; (4) That all cases of pyosalpinx should be operated upon; (5) That certain cases may be relieved by a proper form of drainage; (6) That an operator should not enter upon a case with a fixed determination to do a radical operation; (7) That the vaginal route is unsuitable for a radical operation; (8) That vaginal gauze drainage is the best form and has its definite indications and use.

Dr. EGBERT H. GRANDIN.—To my mind the most important part of the paper is that relating to prophylaxis. Prophylaxis, if properly instituted, would enable us to avoid operating for pyosalpinx, because then the chief cause of pyosalpinx, the gonococcus, would disappear. I do not believe that any of those present tonight are going to live to see the day when the gonococcus will disappear. But it is time that a crusade of active nature should be entered against this gonococcus. Not alone is it a question of hygiene on the part of the woman, not alone is it a question of instruction of physicians and nurses of *how* to keep clean, but it is a question, a burning question, of the future to teach the man and tell him of the risks he runs and subjects the woman if he marries her with his gonorrhea present; perhaps, too, we should go further and teach the woman the risks she is subjecting herself to in marrying a man with gonorrhea. This is the true phase of what our distinguished President calls "race suicide." He looks at it from the standpoint of the lay man, the unwillingness of men to make children and the unwillingness of women to bear children. "Race suicide" is really the inability to bear children because the man has placed the gonococcus within the woman. As Dr. West has stated in his paper, 66 to 70 per cent. of the diseases of women may be traced to the gonococcus.

With regard to the treatment, I am glad Dr. West did not refer to the methods which used to be resorted to and some perhaps which are used to-day, *i. e.* the persistent tamponing and hot douching, and the application of medicaments to the vaginal vault. To-day we look upon pyosalpinx as a surgical disease, even as we look upon appendicitis as a surgical disease. I should like to see the term tubal abscess adopted instead of pyosalpinx. I agree with the doctor that it is not wise to interfere with these cases in the acute stage if we can possibly avoid it; if possible we

had better treat the condition as we treat appendicitis, *i. e.*, operate in the interval stage.

As to the question of the choice of route, where there is a swollen tube that approaches the vaginal vault and bulges behind the uterus, and where there is a plastic exudate there, I do not think there is any difference of opinion; the thing to do is to evacuate the pus per vaginam. My preference is to make a large incision and afterwards wash out the cavity with saline solution; then pack the cavity with gauze for twenty-four or thirty-six hours and remove it and then repack it. I have never tried inserting the rubber tubes into large abscess cavities because it appears to me that if the finger is able to break up the multiple abscesses, or cavities, gauze will act as well. When we are dealing with pyosalpinx which does not approach the vaginal vault usually the proper way to attack it is from above for the reason that we can do better surgical work from above, because the eye assists the finger. Another reason of entering from above is that we can find out the extension of the process and whether or not the neighboring organs are involved. Again when going in from above we are enabled to inspect the other tube and ovary and learn whether or not it is necessary to remove them.

This leads me to a discussion of one of Dr. Broun's cases and the question he brings up as to whether in opening the abdomen for the removal of diseased tube or ovary, or both, if we find the other side slightly affected is it advisable to leave them *in situ*? I would say, *Take them out!* in gonococcus infection, and here also remove the uterus as well. In the consulting room we often meet with evidences of imperfect work, where a uterus has been left in in a gonorrheal case. Once the gonococcus gets beyond the internal os I do not know of any way to cure that woman. The gonococcus may stay there for years; but sooner or later it will involve not only one side but also the other. Therefore, I should urge the removal of the other adnexa in these cases; if left behind some such cause as sexual congress, or perhaps the changes that occur coincident with the pregnant state, or even during the puerperal state, lights up the condition and it may cost that woman her life. These views were threshed out years ago, but I am certain that I am doing right in saying that in cases of pyosalpinx of gonorrheal origin do not stop short of removing the adnexa on the other side, but also do a supravaginal hysterectomy.

Dr. LEROY BROUN.—The use of gauze in draining tuboovarian abscesses has its objections besides being very painful to the patient in the removing and replacing. Instead of using one tube, or a T-shaped tube, I have been in the habit of using two tubes; one a small tube having only one or two fenestra in the upper end, and a larger tube, with fenestra throughout its length. The tubes are sewn together and placed in the abscess cavity and sewn to the edge of the wound. The fluid passes through one tube into the abscess cavity, washes it out, and returns through the other

tube with the fenestra along its length. Such an arrangement works admirably. These tubes can be left in for four or five weeks.

Dr. HENRY C. COE.—Some confusion has been introduced into the discussion by considering acute salpingitis in the same category with pyosalpinx. When we speak of operating upon an acute case we are not within the limits of this paper. In acute cases my experience has not been favorable; we cannot then open the abdomen with impunity. I am accustomed to teach that the classical description of pyosalpinx and the condition upon which a diagnosis is based are more often absent than present. We may make a diagnosis of pyosalpinx and find a tuboovarian abscess, or a pelvic abscess, or a combination of the two. We cannot always tell that we are draining the tube by placing a drain within the ordinary abscess cavity. We cannot always trace the origin of the purulent focus in the operating room as we would in the laboratory. I believe in opening from below, but would fear a permanent fistulous tract if a drain were allowed to remain as long as the reader advises. These patients may make a perfect symptomatic recovery, although there cannot be a restoration of normal anatomical conditions. If a radical operation is to be done in these cases the abdominal route in my opinion is the one to be preferred, because we can proceed more intelligently, especially in separating intestinal and appendicial adhesions. Dr. Grandin's remarks are quite apropos, and I think the burden of responsibility lies with the general practitioner. Some of the most severe cases of gonorrheal salpingitis which I have seen, were acquired from the husband who had a cured gleet. The physicians should know when a man was in proper condition and position to marry.

Dr. J. RIDDLE GOFFE.—It is difficult to determine the exact time at which a man is completely cured of his gonorrheal infection and is safe. During the past few months I have had in my private practice three cases of women in highly respectable families who have contracted the disease from their husbands during their early married life. In one case the couple were on their wedding trip; the husband had not been exposed for six months previous to the wedding, had been treated and carefully examined several times, the last examination two weeks before the wedding, and pronounced to be absolutely free from the disease and perfectly safe by one of the best and most celebrated genito-urinary surgeons in New York. This shows what a difficult question is gonorrhea with which to deal, and we should not start into a crusade with the idea that it is a simple thing to exterminate.

The scientific features have not yet been definitely determined, to say nothing of the social problem involved. I do not say this to cast discouragement upon efforts in this direction. I am heartily in accord with every movement, either scientific or social, that tends to allay or eradicate the ravages of this terrible scourge.

Dr. JAMES N. WEST.—I wish to thank the members of the

society for their kindly treatment of me in discussing my maiden effort, this being the first time that I have had the privilege of reading a paper before you.

With regard to the question of drainage and the form used, about 12 years ago, when I was an intern at the Woman's Hospital, I saw a great many cases drained in various ways; among others was the gauze packing which was taken out and repacked. It was a very painful operation and in some cases required the use of an anesthetic. In the method advocated in the paper the gauze is gradually withdrawn until it is all out by the sixth day; then the drainage tube which was introduced and sewed in position at the time of the operation, left in place for five weeks. One great trouble usually encountered is that the drainage is removed too soon and there occurs a reforming of the abscess. If removed too soon the vagina contracts down quickly and the abscess forms again. If one can maintain drainage until the abscess cavity has closed and healed, his patient will probably recover. The sinus will remain for some time and continue to drain, but it will close in time. A self-retaining catheter with fenestra in it is used. An ordinary sound is used to stretch it with; it makes it form a straight line and can be readily inserted. As you withdraw the applicator the catheter is left in place and remains two or three weeks. When ready to remove it simply pull it out, and the opening left will soon close. This method makes a very effective drainage.

I am pleased to learn that all agree regarding the technique of the operation, about the time to operate and the character of the operation to be performed. There seems to be but very little difference of opinion regarding this.

With regard to removing the Fallopian tube on the side not affected, I take this ground: If we are called upon to operate for a certain diseased condition I believe we should operate upon it, and I do not believe we are called upon to go outside of that disease. Later on if a diseased tube appears, or a diseased ovary, then we should operate again. Every patient who is unfortunate enough to develop the disease, may possibly be unfortunate enough to require another operation, but that is not our fault. Before another operation is demanded she may have given birth to another child. It is important to conserve all normal and useful tissues and not to anticipate the possible development of disease.

With regard to Dr. Wylie's remarks about washing out the uterus after curetting it, I always do that before operating upon such cases, but neglected to speak of it in my paper.

The case reported in which there was an extensive inflammatory process and the patient under the influence of an anesthetic had drainage tubes inserted at the end of ten days, a tablespoonful of pus was found. This case serves to illustrate the statement that seven or eight days is not sufficient time to drain. Drainage should be kept up for a much longer period.

Another question that interests me very much is that relating to the proportion of cases due to abortions and those due to gonorrhea. The statistics that I have gathered, many thousands in number, were very well worked out. But I believe the results are to be considered in relation to the country where the work is done. In America, for instance, very little of this work is done; there are not many investigators here, and these tubes are not often examined, whereas, in France, where gonorrhea and other venereal diseases are rampant, we get statistics, and also from Germany. My statistics are made up largely from those of France and Germany. Incomplete abortion no doubt plays a large part in the causation of pyosalpinx in this country, and it probably shows that the gonococcus is not so prevalent in this country.

TRANSACTIONS OF THE CHICAGO GYNECOLOGICAL SOCIETY.

Meeting of March 17, 1905.

The President, J. CLARENCE WEBSTER, M.D., in the Chair.

ANENCEPHALUS.

DR. CHARLES E. PADDOCK.—I have here a specimen of anencephalus which I secured to-day from Dr. Wilson, who is present, and it will be best to have him give the history of the case.

DR. WILSON.—The specimen was obtained from a woman, 27 years of age, who menstruated last on the 31st of July. She felt fetal life the 3rd of December, and up to four weeks ago. Three weeks ago I examined her and was unable to elicit any fetal heart tones. I was unable to locate the head. Beyond that, everything seemed perfectly normal. Urinalysis was normal. Last Sunday I was called to see her, and she said she had not felt life since I was there. An investigation was started. I examined her three days in succession without any satisfaction, and then made a diagnosis of dead fetus based on these factors: Absence of fetal heart tones; absence of fetal movements; lessening of the size of the abdomen; decrease in the resistance of the uterus, and the presence of milk in the breasts, together with the subjective symptoms of nausea and malaise.

Vaginal examination disclosed a patulous os and a fetal body could be felt.

Dr. Paddock was called in consultation, and confirmed the diagnosis. Several attempts were made to induce labor. A bougie was inserted and left in for several hours to bring on contraction, hoping in this way to forcibly dilate and extract the fetus by version.

DR. PADDOCK.—The cause of the child's death was torsion of the cord. The cord is normal in length, but twisted to such an extent that it entirely occluded the vessels at the umbilicus.

It is difficult to make a certain diagnosis of dead fetus. I advised Dr. Wilson to induce labor in this case from the fact that the patient was positive there was a dead fetus, and because my own diagnosis was so certain. While I realize the possibility of a mistake being made, in this case I am fully justified by the results.

The specimen is a male anencephalus with spinabifida. Generally these monsters are female.

DR. CHARLES B. REED.—If any remarks are to be made on this case at all, they would be in the way of criticism for advising the induction of labor. The child was evidently in good condition, that is, was not decomposing. There was no evidence of absorption; the woman was in good condition, and there is no question but what labor would have come on normally within a short time, without as much violence as would result from the induction of labor. I regard it as an error in art to induce labor in these conditions.

DR. HENRY F. LEWIS.—I join a little less forcibly in Dr. Reed's criticism on the course of procedure in inducing labor, because of the diagnosis of a dead fetus. In the first place, it is difficult to make an accurate diagnosis of dead fetus. There are points in diagnosis that are extremely vague, unless pieces of the dead fetus come away or infection occurs, and we get symptoms of it. Infection did not occur here. But if there is a disturbance, are we sure the fetus is dead? Sometimes we have to wait a long time before the fetus will be expelled.

I had a case a little while ago at the Cook County Hospital where I made a diagnosis of dead fetus and where I instructed the interne to induce labor at about the same time as in this case. But I did that after considerable deliberation and consideration and for several reasons. In the first place, there was as good evidence of a dead fetus as we ever get, except sepsis. We had about the same evidence Dr. Paddock and Dr. Wilson had in their case—cessation of fetal movements; the fetal heart was not heard; and the woman's abdomen not only ceased to become larger, but it had become smaller. In addition, the woman had delirium tremens, with a large amount of albumin in the urine, attended with a considerable number of hyaline and granular casts. We thought that we had here a combination of circumstances sufficient to warrant us in emptying the uterus. Here may be a point for criticism, as to whether delirium tremens is an indication sufficient for the induction of labor if we do not have a dead fetus. In the case I speak of the child was of about seven months' gestation. It had apparently been six weeks or two months dead. Since that time the woman ceased to increase in size, and in fact became smaller. Were we justified in starting labor in view of the existence of delirium tremens, or was it a sufficient indication for us to advise that method of treatment?

As to Dr. Paddock's case, the specimen is an interesting one of anencephalus with spinabifida.

DR. JOSEPH B. DE LEE.—There is one point Dr. Lewis referred to in regard to inducing labor in case of delirium tremens that I wish to speak of. He stated that his patient had albuminuria and delirium tremens. I recall one case I had of toxemia in pregnancy that presented a perfect clinical picture of delirium tremens of the low asthenic type, in which I induced labor on account of the toxemia and delivered a live child, but the woman died twenty-six hours afterwards. Is it not possible that Dr. Lewis' case was one of toxemia presenting the picture of delirium tremens?

DR. GUSTAV KOLISCHER.—This specimen raises the interesting question as to whether death of the child was really due to torsion of the umbilical cord. I am rather inclined to believe that it was not, for the reason that death of the child demands an absolute shut-off blood supply, and we would find some increase about the insertion of the umbilical cord, which is not the case here. We know that all monsters will die after a certain length of time if the vital functions are not kept up by an adequate blood supply. Of course we cannot express a positive opinion in this case without having microscopical cuts made as to whether this part of the umbilical cord bears out the theory that its covering is not lost, that it is continued, and is not amniotic.

So far as inducing premature labor is concerned in Dr. Paddock's case the result bears out the indication; but I think it is one of the most difficult things to decide as to whether a fetus is actually dead or not. Oftentimes it is absolutely impossible to differentiate the regular fetal sounds which we hear from the circulation of the mother. We know that quite often it happens that the mother does not feel any movement of the child at the fifth or sixth month, and yet the child is alive. We should never induce premature labor if there is not an absolute and strict indication for so doing. It is a rather doubtful proposition as to whether the statement of one or two competent men, who are unable to find or hear any heart sounds, is a sufficient indication to induce labor if the other conditions of the mother are normal. We are apt to be caught by some disproportion and induce premature labor where it is practically not indicated.

DR. W. L. WILSON (closing).—Given a reasonable diagnosis of dead fetus, such as we made in this case, why should we wait for toxic symptoms to develop before inducing labor? As it was, it was hard enough to extract the child. The vagina was packed. This failed to bring on labor. A bougie was inserted, the cervix packed again, and left for twelve hours, which failed to bring on labor. At the time of the operation the cervix was dilated so that it would admit my three fingers without difficulty, and within a few minutes, say twenty-five minutes, I could insert the hand and produce version without much difficulty. At the time of my examination, and prior to Dr. Paddock's appearance in the case, the cervix was dilated to the extent of one finger. The question of a

live child was brought up, and the possibility of its still being alive discussed, but a diagnosis of dead fetus was made. Why should we wait for toxic symptoms in a case where the diagnosis is clearly evident?

THE PRESIDENT.—This is an important subject, and I think the man who took the negative side should be given an opportunity to reply. I will, therefore, ask Dr. Reed to speak.

DR. CHARLES B. REED.—I think if this case had been treated expectantly, the Doctor would not have found it so difficult to extract the child. In the first place, the soft parts would have become so softened by the delay, and the child so much softer, the tissues so loosened and disintegrated, that delivery would have been very much easier. Furthermore, there would be no harm in waiting, as long as the woman presented no symptoms of absorption. While the woman was in a good condition, the natural powers of the uterus in expelling the child should be awaited. As soon as conditions arose which seemed to indicate difficulty of danger to the mother, there was still time to empty the uterus before the case became serious. Also, emptying the uterus under these conditions would have been a much simpler proceeding. Furthermore, it would not be difficult by the use of dilating bags to secure the proper amount of dilatation to have delivered that fetus with ease. I believe that it is an interference that is not really justifiable as a general thing. I believe it is an error in art. Fortunately, in this case there was no harm done, but I believe the operation was more difficult in execution than the conditions of the case would ordinarily require.

To summarize, one might say that the birth of the fetus would occur in a short time spontaneously, and that the methods of inducing premature labor, even the introduction of the catheter is not devoid of danger.

Women who give birth to a dead fetus spontaneously usually recover very quickly. Winckel reports hundreds of cases treated by the expectant method without injurious consequences. The interference is an unwarranted violence unless the condition of the mother, such as beginning absorption or rupture of the membranes, presents an indication.

DR. CARL WAGNER.—I want to speak briefly of a case which came under my observation where a physician thought the fetus should not be delivered after he had made a positive diagnosis that it was dead. I saw the woman at the time she gave birth to the dead fetus; six months after, according to her statement, everything came away nicely. It was a simple affair. But that woman has remained an invalid for five years, undoubtedly due to the toxemia which occurred at that time. Thus I believe that after the diagnosis is made, the dead fetus ought to be removed.

PRECIPITATE LABOR—PREMATURE DETACHMENT OF THE PLACENTA.

DR. RACHELLE S. YARROS.—The patient, a multipara, gave a history of easy labors; had been in labor this time for twelve

hours without any progress; said she was overdue several days. On examination the position and presentation were found normal, but head not engaged. The cervix was practically effaced, and dilatation the size of two fingers. There was some degree of hydramnios. She was having pains every half hour. These pains continued for twenty-four hours longer without any progress, and finally after a dose of one-quarter of a grain of morphia stopped altogether. In two weeks I was called again; the same condition was found; she had had pains for nearly twenty-four hours, and they ceased again. Finally, I was called a week later, and she continued having pains every half hour or every twenty minutes for nearly thirty-six hours, after which time I made an examination and found the head still not engaged and dilatation the size of three fingers. The cervix was entirely effaced, and the os rather rigid. In the examination I accidentally ruptured the membranes, and, roughly estimated, over a quart of fluid escaped. She had half a dozen severe pains, and a normal child was born in seven minutes after my examination. The questions arise whether the moderate amount of hydramnios could have been the cause of the inefficient pains, and by what mechanism did the os dilate so rapidly?

The other three cases are cases of premature detachment of the placenta, one in my own practice, and two that I saw abroad. In the first, the patient, a multipara, had been in labor for several hours, and had several fainting spells before I saw her. I found her unusually pale, with a pulse of 110 or 120; the abdomen very tense, and extremely tender to touch; no fetal heart sound could be heard. The patient felt faint with each pain. Dilatation being complete, the membranes were ruptured and forceps were applied. No blood escaped even then. The baby was delivered rapidly; it was dead. The placenta followed instantly, and with it a large mass of clots. The uterus failed to contract in spite of all the means I used, including packing, and I nearly lost the patient.

The second case came to the hospital with a history of bleeding through the entire day. She had been given whiskey in order to sustain her strength, and was in a half intoxicated condition. But she looked very pale; her pulse was 120; the abdomen was tense and tender to touch; fetal heart sounds could not be heard. Placenta prævia was excluded, and a diagnosis of premature detachment of the placenta was made; a dead child was delivered by version and extraction, within half an hour. The placenta followed immediately, and with it many clots. In this case, too, the uterus failed to contract, in spite of all the efforts that were made, including packing. The patient died in a short time.

The third case was a primipara. She had been having slight labor pains for twenty-four hours, but was feeling well. It was accidentally discovered that she was bleeding, and after a very careful examination, resulting in a diagnosis of premature de-

tachment of the placenta, the cervix was rapidly dilated and a living child delivered by version and extraction. The placenta followed at once, and then a considerable hemorrhage. There were no lacerations of the cervix, yet the bleeding continued, because the uterus could not be made to contract. Finally, a vaginal hysterectomy was resorted to, for the patient was rapidly failing, but she died.

It would seem that the danger of premature detachment of the placenta is not only great before delivery, but that the atony of the uterus that follows is just as dangerous to the mother's life.

DR. CHARLES B. REED.—I would like to inquire of Dr. Yarros if in the first case the contractions of the uterus which the woman experienced, were attended by definite, real labor pains! And, secondly, if they were, what effect, if any, they had upon the cervix, and whether the cervix was entirely effaced in the dilatation of the os or whether there was effacement of the cervix with the two and three-finger dilatation she spoke of? Also, in the second case, whether any attempt was made at packing the uterus to stop the hemorrhage?

DR. GUSTAV KOLISCHER.—The first case reported by Dr. Yarros is quite interesting in that it shows we cannot violate elementary rules in obstetrics without endangering the life of the child, and eventually the life of the mother.

It is a well-known fact that if hydramnios exists in a multipara, one of the things we have to do if the head or face (after labor has set in) has become engaged in the pelvis is to rupture the membranes. If we do not do this, we may commit another error—leave the patient after the membranes have ruptured spontaneously. The fundus of the uterus and the lower uterine segments represent one tube. Although the external os is not entirely dilated, it will dilate at once at the slightest pain if the membranes are ruptured. We know, as a matter of experience, that if in a multipara pain sets in, and the membranes rupture, delivery of the child is expected immediately. We know that we expose the mother to grave danger if we leave her unattended with hydramnion, because the overdistended uterus is very liable to postpartum hemorrhage on account of insufficient contraction.

So far as premature detachment of the placenta is concerned, we know that if a woman is exsanguinated by any cause, she is liable to have atony of the uterus. We must be prepared for that. I cannot conceive how any person with obstetrical judgment can go to work and perform vaginal Cesarean section on account of premature detachment of the placenta. It is beyond my conception. I can understand how one can perform vaginal Cesarean section in a case in which he wants to empty the uterus as soon as possible.

DR. YARROS.—Vaginal hysterectomy.

DR. KOLISCHER.—An attempt at hysterectomy in such a case is also beyond my conception.

There is one other thing I want to emphasize very strongly, and

it is this: we have to be concise, definite, and accurate in our obstetrical statements and teaching. It is absolutely wrong for a statement to go out to the profession, endorsed by this Society, that if there is post-partum hemorrhage, we have to do all sorts of things. It is such ideas that will. We have to do certain things; we should not waste time and waste the blood of the woman trying to do other things. That is not an obstetrical indication; it is not the way to act. There are three things to do; pull down the uterus as far as you can, compress the uterus bimanually, or pack the uterus, and exert counter-pressure over the abdomen to prevent the uterus from rising again.

DR. RACHELLE S. YARROS.—In answer to Dr. Reed's question, I would say that at the first examination the cervix was almost effaced, and that during the pain the os became much more tense, and that the uterine contractions could be felt distinctly. Packing was used in every case.

In answer to Dr. Kolischer, I would say that he surely does not mean that the membranes should be ruptured in every case of hydramnios. There did not seem to me any justification for such procedure in this case; so long as mother and child were in good condition; the mere fact that it was inconvenient for us and the patient to have the labor drag on did not warrant the hastening of the labor.

As to vaginal hysterectomy for post-partum hemorrhage, he surely knows there are cases on record where the mother's life was saved by this operation. The only difficulty is to know just when to do it; that is, not to do it too soon, and not too late.

Discussion on the paper of Dr. Heliodor Schiller.

THE TREATMENT OF VAGINITIS BY YEAST.*

DR. JOSEPH B. DE LEE.—I would like to ask Dr. Schiller whether the use of yeast would be admissible during pregnancy?

DR. GUSTAV KOLISCHER.—I have had a little experience in the treatment of chronic gonorrhea with yeast, but it has not been satisfactory. It is true that during the time of treatment the secretion diminished, but we were always able to find gonococci such as were found previously. There were some cases in which the clinical symptoms pointed to a uterine gonorrhea, but we were unable to find gonococci. We stopped our experiments because in a few patients the yeast set up symptoms of inflammation around the appendages and in the parametric tissue. Of course, we can hardly attribute this to the administration of yeast alone. Almost any interference during a gonorrhea may lead to involvement of the appendages, or of the parametric tissue.

So far as the disappearance of gonococci from the vagina is concerned, we must bear in mind one thing, that certain conditions which primarily are due to gonorrheal infection may be kept up, and maintained, and we are absolutely unable to find any gonococci, so that among the men who do most research work in gonorrhea, there is still discussion as to whether certain secretions

*See original article, page 635.

coming from the cervix or uterine cavity previously infected by gonococci are still infested with those germs, or whether the conditions are due to other causes.

We did not use yeast in the way Dr. Schiller has reported in particular, nor did we do anything to improve the soil for the yeast as he did. It is to be hoped that something will be gained by this method of treatment, because in these conditions mentioned the treatment itself is one of the most thankless jobs that the gynecologist can be called upon to perform.

DR. J. CLARENCE WEBSTER.—Some time ago I studied the literature of this subject somewhat, in order to try to form some idea as to the efficacy of yeast in such conditions as have been described by Dr. Schiller, but I was not persuaded that this treatment was any better than any of the other methods already in use. The use of yeast for medical purposes is not at all a recent innovation. In France, in 1852, Mosse described its employment by workers in breweries, especially in skin diseases, furunculosis, acne, etc. It was found by the employees that they were benefited from rubbing the yeast into the skin in these conditions. Lassar, a well-known dermatologist, has also experimented along these lines. Others have administered yeast internally as well as externally, and have claimed to have obtained benefit from it. Some interesting experimental work has been done with yeast by Sergeant. The staphylococcus aureus was used to inoculate rabbits; after their ears had been shaved and scratched, and after a certain length of time the yeast was rubbed in, and it was claimed that recovery took place much more quickly than in the control experiments. But it was always found that if the inoculation was severe, the rabbit died, and the yeast exercised no antagonistic power whatever.

With regard to the use of yeast in the vagina for the cure of gonorrhea, Cronbach claimed that he got no better results with it than he did with ordinary antiseptic treatment.

There has also been carried out some experimental work with regard to immunization, the yeast being administered to animals some time previous to the inoculation. Some claims have been made that a certain degree of immunity can be obtained. I feel, at the present moment, that the proof, that gonorrhea can be treated by yeast more satisfactorily than by the antiseptic method, is not very certain.

DR. SCHILLER (closing the discussion).—In answer to the question of Dr. De Lee, as to whether yeast has been used in pregnancy, I have to say that Dr. Plien used rheol bacilli in the cervix of pregnant women with good results. Rheol is a combination of living yeast and asparagin, kept in paraffin oil, with some boric acid. He used this with good results.

I would like to mention that yeast is used by some surgeons as a preparatory disinfection of the vagina before vaginal operations and since they have used it they have had better results and no infection.

Yeast in the vagina can be used in pregnant women, and I would

not hesitate to use it if there was a severe endocervicitis or chronic vaginitis.

As to Dr. Kolischer's remarks concerning parametritis and salpingitis, I will say that cases of salpingitis have been reported after the use of yeast. All the cases of Plien, who saw salpingitis were acute cases of gonorrhea which he treated with rheol bacilli in the cervix.

Olshausen and Eberhardt, and some others, explained the bad results which Plien obtained by stating that he used bacilli of rheol in the cervix in acute cases of gonorrhea and say that no other results could be expected. It is hard to believe how yeast could set up a salpingitis if used only in the vagina. The second explanation which Dr. Kolischer gave, that salpingitis is the consequence of an ascending process of gonorrhea, and not due to the yeast treatment, is much better.

I understand that Dr. Kolischer used plain yeast, with no results.

Concerning the use of yeast in other diseases, such as diabetes, constipation, and auto-intoxication from the intestinal canal, furunculosis, etc., I will say that some favorable results have been reported.

The work concerning immunization of yeast was done by an American author whose name I do not recall. With it he secured an increased resistance against infection.

Cases of

ABDOMINAL AND VAGINAL CESAREAN SECTION

were reported by Drs. RUDOLPH W. HOLMES,* JOS. B. DE LEE, C. B. REED, CHAS. E. PADDOCK, C. S. BACON, F. B. EARLE, J. CLARENCE WEBSTER.

SECOND CASE OF CESAREAN SECTION FOR FUNNEL PELVIS.

DR. CHARLES B. REED, M.D.—Cases of Cesarean section are not very unusual, but the one herewith presented possesses a few points that are possibly of general interest.

The patient's first labor resulted in a craniotomy with difficult extraction of the crushed head, and her second delivery was by Cesarean section, which I have already reported.

She is now 22 years, and shows the following anatomical characteristics:

The patient was 158 cm. high, with large, full and mature breasts, noticeably slight in figure with narrow hips and strongly converging genitocrural folds. The physiologic lumbar lordosis is diminished, no kyphosis, no rostration of symphysis, iliac venters rather straight and no evidence of early rachitis.

External measurements with tape and pelvimeter give sp., 19.0 cm.; crests, 22.0 cm.; troch, 26.0 cm.; Baudelocque, 19.0 cm.;

*See original articles, pages 732 and 738.

circumference, 77.5 cm.; left oblique, 19.5 cm.; right oblique, 20.5 cm.; post spines, 8.5 cm. (average 7.5); and on same plane with sacrum. The sacrum is 16.0 long (average 10.3) and very narrow. Tip of coccyx to lig. arcuatum, 7.0 cm.; tip of sacrum to lig. arcuatum, 9.7 cm. outside, or allowing 1.0 cm. for thickness of sacrum 8.7 cm. inside (Klien's average 12.5, Garfunkel's average 12.3 cm.). The distance from tuberosity to tuberosity measured by the Breisky or Chantreuil methods and the Ayers pelvimeter was 8.5 cm., there being no practical difference in the result from either method.

The tip of the sacrum is easily accessible by the vagina and the coccyx projects acutely into outlet without ankylosis. The pubic arch is narrow, the symphysis high, the ischiatic spines also project markedly into the outlet. The linea innominata appear to be almost parallel, and the attempt to measure the conj. diag. never succeeded, as the promontory was apparently pushed upward and backward and was inaccessible to examining finger.

The inlet measurements were made directly before closing the abdomen and gave c.v. 11 cm. and transverse of 13.0 cm. Thus the inlet is as large as the average and the outlet is contracted in both diameters.

Thus we have a typical funnel pelvis or "assimilation pelvis," according to Breus and Koliskc, which furnished a definite indication for operation.

No compression of the blood vessels, either manual or otherwise, was attempted in this operation, and the hemorrhage was no greater than cases in which compression was employed.

The operation which I had done about two years previously had resulted in very dense adhesions, broad, short and of gristly consistency, which bound the uterus firmly to the abdominal wall, and thereby presented all the conditions of a ventrofixation in pregnancy.

The largest band was about two inches in width and one-eighth inch in thickness.

In spite of this restriction of its upward march the uterus was in no way distorted, nor the pregnancy interfered with.

The patient was unaware of any abnormality during her pregnancy, except an occasional pulling pain in the region of the scar during the latter months of gestation.

The woman was at term, but not in labor at the time of operation. After the repair of the uterine incision the tubes were resected in the expectation of producing sterility.

The uterus has again become densely adherent to abdominal wall, where the incisions coincided.

DR. CHARLES E. PADDOCK.—Mrs. W., aged 37, six-para. The patient had passed through five full-time pregnancies and labors, resulting in four still-births and one living child, the living child dying after a few weeks. The labors were long and hard, terminating, according to the statement of the patient, by instrumental delivery either by forceps or craniotomy; the children, according to the mother, were from ten to twelve pounds.

Pelvic Measurements.—Anterior superior spines, 23 cm., and in the iliac crests, 25 cm.; tuberosity ischii, 10 cm.

We have here a patient on the shady side of the child-bearing period, having gone through five pregnancies and prolonged hard labors, with nothing to show for her suffering; a woman in whom the maternal instinct is exceedingly strong, begging for a living child. With such facts before me, I felt justified in performing a Cesarean operation. On the other hand, however, with a pelvis so slightly contracted and it being the first child, I would not have advised such an operation. It was necessary that I guarantee to this woman a living child, which I could safely do by the abdominal route, and which I could not have done by the normal passage. While it might have been possible for this child to have been born alive, weighing but nine pounds, with normal dimensions of the head, but with advanced ossification of the cranial bones, I felt that the risk was too great, and that it was time that some consideration was given to the child.

DR. CHARLES S. BACON.—The four cases I wish to report are in addition to those I presented to this society a few months ago. In all these cases eclampsia furnished the indication for the vaginal Cesarean section.

CASE I.—The first patient was a primipara, Mrs. K., who was sent to the Polyclinic Hospital in the thirty-sixth week of her pregnancy. For a month or six weeks before she was in a toxic condition. There was considerable edema, vomiting, headache and other signs of toxemia. Before she was sent to the hospital she had had quite a number of convulsions. She had three or more after her admittance to the hospital. The last convulsion occurred after she was in the anesthetizing room, but before the anesthetic was begun. This convulsion was very severe; respiration stopped, and artificial respiration was resorted to. Afterwards a little anesthetic was given and oxygen administered. She stood the operation very well, and for about three hours after the operation had no further convulsions, then two or three convulsions occurred in quick succession, in the last of which she died. The child was fairly well developed, and at first was deeply asphyxiated, but resuscitated, and promised to do very well in the incubator. After the death of the mother, however, the child was taken to another hospital, and did not receive maternal milk. The child was not under my care, but I learned that it died after fifteen days from symptoms of malnutrition and intestinal disturbance.

CASE II. This case was primipara, in about the thirty-first week of pregnancy. She had also symptoms of intoxication some time before the convulsions, and for a period of about four days before the convulsions appeared she was in such a condition that she was afterward totally oblivious of all that had passed. The convulsions began twenty-four hours before the operation, and there were altogether ten or a dozen of them. During the attacks our colleague, Dr. Earle, was called, who afterwards

called me in consultation, and on carefully studying the case we were convinced that her chances were poor without delivery. Labor had not begun. She was taken to the West Side Hospital, and the uterus emptied by vaginal Cesarean section. The patient was in a precarious condition for about twelve hours afterwards, but began to recover, and eventually made a very good recovery. The child was very feeble, about thirty-one or thirty-two weeks old, and was with difficulty brought to breathe. Oxygen was administered to the child during the night for a period of ten or twelve hours, and it apparently was improving until it finally died in a convulsion.

CASE III. The third case was a primipara, in about the thirty-second week of pregnancy. Convulsions appeared before labor began. The patient was in a toxic condition for at least two weeks before convulsions set in, and for several days before there was almost total suppression of urine. She was operated at the Augustana Hospital after the second convulsion. The patient did not recover her normal condition after the labor. There were no convulsions, but a weakened condition, and no urine passed. She died about twenty hours after the operation. The child weighed less than four pounds; was put in an incubator; fed on mother's milk, did very well, and is now a strong, healthy child. At the end of three months it weighed about eight and a half pounds.

CASE IV. The fourth case was that of a woman in her second pregnancy. She had had a child some five years ago without convulsions, but had toxic symptoms during pregnancy. The child died shortly after birth. The patient in the middle of pregnancy began to develop a very marked edema; she increased in weight rapidly, but examination did not show albumin in the urine. On account of her edema, headache and other symptoms she was brought to the hospital for treatment, although she had been under a strict diet, and such treatment as could be given. She was kept in the hospital about three weeks, with daily sweats, strict diet, and free purgation. In the course of this treatment she developed more serious symptoms. It was my intention to bring on labor within two or three days; but before the time set for the induction of labor, she one day suddenly lost consciousness and vision, but had no convulsions. Her condition was so alarming that I at once made a vaginal section, and removed the child. This was about the thirty-third week of pregnancy. The patient recovered very well, but did not recover consciousness for several days. The albumin was slow in disappearing from the urine, and has not entirely disappeared yet. The operation was made about three weeks ago. The child was apparently normal, was placed in an incubator, and promised to do very well, but on the fourth day of its life it suddenly died. The nurse had taken the child from the incubator, and had given to the mother, who nursed it a little. It was put at the breast two or two times before, and on this occasion, when the child

was put at the breast, the nurse found the child dead. Whether it died in convulsions or not, we do not know.

These four cases are not flattering, that is, two maternal deaths out of four, and only one child saved. It is quite evident, however, that the two women who died were in a very moribund condition at the time of the operation, and I think there is no doubt they would have died anyhow if an operation had not been done. One other woman was in such a condition that we had very little hopes of her recovery, but she was saved. The last patient might possibly have been saved by some other treatment. Of the children, it seems particularly unfortunate that two of them were lost, because their chances at birth were apparently good. One was lost at the eighteenth day, and if it had had mother's milk it probably could have been saved. In the other case the cause of death was inexplicable, while in the fourth case the child was very feeble and died in convulsions.

In regard to the indication in these cases, in spite of the result, there is no question that the indication was given. In all of the cases the cervix was long and hard, not at all open, and no other procedure would have permitted of so rapid emptying of the uterus, with the great probability of saving the mother and the possibility of saving the child.

In regard to the technique, I will make two observations: In all the cases but one a posterior incision was made, as well as the anterior. While in the case of a very small child it seems as if it were not necessary to make these posterior incisions. If a child has a head with a circumference of thirty centimeters, it is desirable to make the posterior incision. It is desirable to extend the vaginal incision, as an incision simply through the anterior vaginal wall is not long enough to permit the extraction of the child. The incision through the vagina should correspond with the incision through the abdomen in the classical Cesarean section. It must be half of the circumference of the child's head, for if it is less than that, it will afford a considerable obstacle to the removal of the child. The distance from the beginning of the incision a little behind the urethra to the uterus is only seven or eight centimeters, and the thickness of the uterus, with the little gain that is obtained from the dilated cervix, adds perhaps only two centimeters more, so that we have a length of incision of only about ten centimeters, and if we require four or five centimeters more, that must be obtained by an incision through the posterior wall. Very little can be gotten from an incision encircling the cervix, aside from its convenience, from its making separation of the bladder a little more convenient. An incision encircling the cervix behind seems to be quite useless. In the uterus itself the incision must, of course, also be of the same length, *i.e.* half as long as the circumference of the child's head, and from the middle of the inner os to the reflection of the peritoneum internally we have a distance of only about ten centimeters ordinarily, and so it is desirable to get the additional length posteriorly. But, of course, with a child only

thirty-one weeks old, where the head is not over twenty centimeters in circumference, the posterior incision would not be necessary.

The second observation I would make in regard to the technique is this: I am convinced that the packing of the uterus to control hemorrhage is absolutely unnecessary. In these four operations and in the two described a year ago, no packing was done. The only precaution against hemorrhage was to wait fifteen minutes before extracting the placenta, and that gave time for the contraction of the uterus and prevented any hemorrhage when the placenta came away. The time of waiting can be occupied by beginning the suture in the anterior wall; it is a simple matter, by cutting off the cord and protruding membranes, putting in a sponge, and exciting the uterus to contract to prevent hemorrhage. Taking hold of the uterus, it can be pulled down and the upper sutures can be introduced while waiting, and as soon as the placenta is extracted, the remaining sutures are introduced and the operation finished.

DR. FRANK A. STAHL.—The Doctor stated, if I understood him rightly, that he had no difficulty with the circular artery, and when he spoke of making a deep incision, ten centimeters long, I wondered whether he did not come in contact with that artery, which sometimes produces serious hemorrhage, when ruptured. As we extend the incision upward we may encounter a hemorrhage from this artery; inasmuch as Dr. Bacon had no serious hemorrhage, it would be interesting to know how to overcome it if the artery is injured.

DR. KOLISCHER.—I would like to ask Dr. Stahl what the circular artery is, and where it is to be found.

DR. STAHL.—There is an artery which encircles the uterus at about the junction of the body with the cervix. This is the vessel which is sometimes spoken of as the circular artery. This is the structure which in a case of laceration of the cervix gives rise not infrequently to serious hemorrhage. Oftentimes in these so-called fatal cases of post-partum hemorrhage we will find that this structure is involved. Sometimes cases of laceration of the cervix are reported which have extended up into the body of the uterus, but at the post-mortem examination on some of them, we do not find that the lacerations extend into the body of the uterus.

DR. KOLISCHER.—I would suggest that Dr. Stahl publish the anatomical details of this artery, as they are at present unknown.

DR. GUSTAV KOLISCHER.—I would like to make a few remarks, and first in reference to the case of Cesarean section reported by Dr. Reed, which is interesting not only on account of the indications, but on account of the firmness of resistance of the suture line. This suture line offers resistance to the full development of pregnancy. Another point which is interesting is the very firm adhesion between the suture line and abdominal wall. I think the frequency of adhesions in Cesarean section is due to the impos-

sibility of stopping entirely the oozing from the stitch holes. If we draw along the omentum to cover or protect the line of sutures, as indicated by this diagram (illustrating on blackboard), we get adhesions of the omentum which we all know are very disagreeable and often dangerous.

Another case which is the cause for some discussion is the one reported by Dr. Paddock. In his case the indication was certainly an individual one, and I think Dr. Paddock showed that he had the courage of his conviction and carried it out. He did the right thing, so to say, independently of the general teaching laid down, and I think his operation in that case was justifiable.

In regard to the case of Dr. De Lee, in which there was absolute disappearance of the cervix, so that it was impossible for him to drain from below, and in which he made a supravaginal amputation, he spoke of the result of this operation, in cases of existing infection, as being poor. Wertheim has suggested that where there is infection we should not perform Cesarean section, but should make a complete hysterectomy, and all stumps should be buried underneath the peritoneum and drain into the vagina.

As to the technique of vaginal Cesarean section, I would like to make a few remarks in connection with what Dr. Bacon has said. It is true, we need more space if there is a fully developed child, but we do not gain much space by posterior incision. It is likewise true if we make a circular incision we do not gain much by that, but if we make a T-shaped incision it affords us all the space we possibly want. It will open like the lid of a box, especially if the bladder is detached on both sides, so that the ureter is out of the field of danger. Perhaps I can best illustrate this by making some diagrams on the blackboard. Here is one flap (indicating), and here is the cervix. An important step is to pull down the cervix and strip off the peritoneal fold which runs from the bladder to the uterus. It is very easy to detach this fold from the anterior aspect of the uterus, and we gain as much space by an incision reaching above the internal os as necessary. The posterior incision has one drawback, in that it eliminates the advantages of vaginal Cesarean section; that is, that we are working extraperitoneally, which is the only advantage of vaginal Cesarean section over abdominal Cesarean section. It is almost impossible to incise the posterior circumference to any extent and prevent tearing into the peritoneum which covers Douglas' pouch. I do not think it is advisable to make the posterior incision, as we do not gain the space by it that we desire. If we make an anterior incision, we get plenty of room.

DR. CHARLES E. PADDOCK.—A question which has not yet been definitely settled in my mind is what to do with the omentum following the conservative operation, should the omentum be placed over the incision in the uterus or behind the uterus and will it still be in either place? The former teaching was to carry the omentum posteriorly, allowing any adhesions which might form

to be between the uterine incision and the abdominal incision, so should there be any infection in the uterine wall it would readily find its way through the abdominal incision, instead of behind the omentum.

Regarding the case reported by Dr. De Lee, it seems strange that there should have been such an extensive adhesive process if the wound surface had been properly closed by peritoneum.

DR. FRANK B. EARLE.—I have enjoyed this discussion very much, because it has led me to think over more especially the plan of treatment that can best be followed in these cases of eclampsia. My practice and my teaching has been that, in the majority of cases of eclampsia, we can perhaps deliver these women best by dilating and turning. At any rate, that has been the plan I have followed. I know there has been considerable adverse comment on that method, but at the same time it, to me, has been a good method. I have obtained good results from it. Recently, however, I have departed a little from that plan, and in the case cited by Dr. Bacon, as well as in one other case I saw last Monday, I followed the plan of making an anterior incision. I will simply report the case briefly.

Monday afternoon I was called to see a woman, a primipara, who had been having convulsions for thirty-six hours. She was in the thirty-fourth week of gestation. Her pulse was 160; temperature 103; the convulsions were recurring and becoming more severe. There was every indication that the woman was going to die unless something was done. She was taken six or seven miles to the hospital; an incision in the anterior lip was made, the bag of waters ruptured, forceps applied, and baby delivered without any difficulty. The baby weighed seven pounds. It is now being nursed by the mother, she having recovered sufficiently to nurse the child. The albuminuria is rapidly disappearing, and while it is a little early to judge of the outcome, both to mother and child, yet thus far it has been satisfactory.

In thinking the matter over, it occurred to me that it was a more simple and safer proposition to remove the child in that way than it would have been by the method which I have followed heretofore.

DR. J. CLARENCE WEBSTER.—I have performed Cesarean section nine times, in six cases by the abdominal route, and in three by the vaginal. Of the abdominal cases, one operation was performed because there was cicatricial contraction of the cervix and vagina due to puerperal infection the year previously. The size of the vagina was such as to admit only one finger.

Another case was one in which there were several fibroids, some of them extraperitoneal. Another was the case of a girl, thirteen years of age, a report of which I presented to this Society some years ago, in which there was the condition of placenta previa, with pelvic contraction and small vagina. In the other cases the operation was performed on account of pelvic deformity.

Of the vaginal cases, two were operated for eclampsia, one of which was very interesting, which I will refer to more particularly later.

With regard to the vaginal incision, in two cases I made the T-shaped incision. In a third case I used the T-shaped incision with one extending around the cervix. I did that for a special purpose. The patient was admitted to the hospital in practically a serious condition; her pulse was feeble, ranging somewhere between 140 and 150. The cervix would admit only one finger. Her physician had ruptured the membranes, but bleeding had not been checked. Examination revealed the placenta situated posteriorly, its lower margin being at the internal os. There was practically no dilatation. The patient was in advanced pregnancy. What was to be done? I decided to perform vaginal Cesarean section, thinking that this would be the quickest way of delivering her, with the least loss of blood. I made a circular incision for the purpose of getting at the uterine vessels, in order to secure them. There was practically no blood from the operation, because I secured every bleeding point with forceps. The operation was simple. I put ligatures around the uterine vessels, delivered the child, and afterwards the placenta, and had manual compression kept up until there was firm contraction of the body of the uterus. The patient, however, died two hours after operation.

I have often thought over that case, and wondered whether it would have been possible, by any other means, to have delivered her more satisfactorily, and I am not convinced that it could have been better accomplished by any other method.

In one case I split the cervix posteriorly, but I am convinced that this is not usually necessary. Vaginal section is a very important means of accouchement forcé, especially as applied to eclamptic cases. By downward traction in this operation, we can usually control bleeding, and, if this is not sufficient, forceps may be applied to the vessels; when the child is delivered the risk is practically over.

With regard to the abdominal operation, in cases of section at full term, I have always employed the method of lifting the uterus out of the abdomen, for the simple reason that I wish to prevent the liquor amnii from entering the peritoneum. By the careful use of hot towels, soaked in hot sterile salt solution, there is very little risk of interference with the vitality of the uterus or of the peritoneum, though I think there is a risk undoubtedly in this procedure of injuring the peritoneum to such an extent that adhesions will occur. This happened in a case of my own. I operated a couple of years ago on one of these patients a second time, and found the omentum adherent over the anterior wall of the uterus. The case had healed satisfactorily after the first operation, and there had been no evidence of infection. I am certain that the adhesion must have been due to carelessness in pro-

tecting the peritoneum. We know that exposure of the peritoneum to cold or dry air tends to impair the vitality of the peritoneum, adding to the risk of formation of adhesions afterwards. I do not think it matters, in a case that is treated aseptically, whether we put the omentum in front of the uterus or lift it above the uterus. I do not believe that adhesions will occur if we close the peritoneum properly, and do not subject it to those influences which increase the risk of adhesion formation.

I wondered why Dr. Holmes put a rubber band around the uterus. That is an old-fashioned procedure, which I think should not be employed, if we are going to carry out the conservative operation. Of course, when one has little assistance it might be necessary; but, with one assistant, by pressure on the uterus, one can check hemorrhage sufficiently. The band injures the tissues, increases the risk of adhesion-formation, if not of more serious troubles. In cases in which I have operated in the second stage of labor (and I operated two weeks ago on such a case) I did not lift the uterus out. The fetal head was jammed at the brim, and the fundus of the uterus was against the liver. I could have lifted it out only by making an incision from symphysis to sternum. There was no fear of liquor amnion escaping in this case, so I made a mesial incision on the anterior wall, the uterus lying *in situ*.

I have recently noted in the literature reports of two cases of rupture of the uterus occurring after Fritsch's fundal incision, and the writers have claimed that this incision is not as safe as the old incision. I have never seen any advantage in this incision, and have never carried it out, for I am satisfied with the mesial anterior incision.

With regard to the placenta, in one case upon which I recently operated, the placenta being on the anterior wall, there was a little more bleeding than would occur from cutting through the musculature in the non-placental area, because the sinuses were more developed; but the hemorrhage was controlled by digital pressure and artery forceps; the placenta bulged out, and was shelled out quickly, and the child extracted.

I have never used anything but catgut as suture material in the uterus, mostly continuous, in one case interrupted. I prefer the continuous suture because it is more quickly applied.

With regard to going through the mucosa or not, I do not think it matters at all whether one goes through the mucosa or leaves the suture external to the mucosa, if the patient's genital tract be aseptic. Three layers are usually sufficient, and the peritoneum can be turned in by the final catgut suture.

With reference to nursing, I think the child should be put to the breast as in any ordinary case, whenever there is milk in the breast glands.

3. GEORGE SCHMAUCH.—I would like to say a few words

in regard to rupture of the uterus after Cesarean section. Dr. Webster has mentioned two cases following the fundal incision of Fritsch. I think there are now about thirty-two cases reported of laceration of the uterus after abdominal Cesarean section, and perhaps six or eight after deep vaginal incisions (Duerksen). This shows that we may have to limit our relative indication for Cesarean section in favor of the more conservative lateral section of the pelvis. To-night only a few cases have been reported in which the operation was really absolutely indicated. We know very well that union of muscular tissue after section does not take place in such a way, that regeneration of muscle cells is to be found. It takes place in such a way that connective tissue is formed, and connective tissue is not so elastic as muscular tissue. There is no doubt that danger of laceration is especially great after vaginal Cesarean section, where the lower uterine segment is cut, as it contains less musculature; after Cesarean section the danger of rupture in case of over-distension, is much greater than after abdominal section. Another point, I would like to call your attention to, is how to avoid the place of attachment of the placenta in abdominal Cesarean section. We have observed that the direction of the round ligaments is a good point of guidance. When the round ligaments are converging upwards, the placenta is usually situated on the posterior wall of the uterus, when they are diverging the placenta is attached to the anterior wall and the incision is better made in the region of the fundus.

DR. CHARLES S. BACON.—I would like to make a remark in regard to the criticism of Dr. Kolischer, and that of the President, regarding the posterior incision. The question of the length of the anterior incision, I think, is not yet settled. The risk that Dr. Schmauch has spoken of is to be considered, and it is on account of that particularly that I was led to fear a too high incision. (Goes to blackboard.)

If we have a reflection of the peritoneum anteriorly at this point (indicating), and posteriorly a little lower, we have to consider how much of the distance it is desirable to use. Suppose the cervix is not yet dilated, if we make only an anterior incision, we have to consider the available distance from slightly below the internal os. If we have a child with a head of thirty centimeters, necessitating an incision of fifteen centimeters from the internal os, it means perhaps twenty centimeters from the external os, which is admittedly a pretty long incision. There is no question that the peritoneum can be pushed up quite easily; but if we can avoid say five centimeters of that incision, requiring four or five sutures in the repair, by incising and pushing up the peritoneum posteriorly, we perhaps obviate a certain amount of risk, and that was the fundamental idea I had in view in making the posterior incision. If we have to make a posterior incision in the uterus, we are saving the crutch-shaped incision in the vagina; and the vaginal flap is not very easily repaired; at least, it takes some time, and it

is not brought together as nicely, and does not give quite the space that an incision posteriorly does.

DR. RUDOLPH W. HOLMES.—The circumstances for the Cesar-ean section in the country were not propitious, as all of you must admit. There were only three physicians available—one for the anesthetic, one to look after the baby and general work, and the third to assist me. Dr. Taylor had to work over the baby some moments, and then he was busy with the salt solutions, leaving Dr. Galloway to help me. Under the circumstances I felt it was less harmful to apply the ligature than to have her lose, possibly, blood which was very necessary for her welfare. I thoroughly agree with those who maintain that the uterine ligature is unnecessary as a routine part of the operative technique, but there are circumstances when it is expedient to employ it. In this case we went through the placental site; we made a mesial incision; there was no abnormal bleeding; the placenta popped out as soon as the opening was made. It has been my fortune to see about six sections in which the uterine incision was made over the placental site; in none was there any increased blood loss than normally met with. I believe the dangers during the operation are more imagined than real. Of course, during the puerperium, if the sutures loosen, then there may be a serious complication.

DR. CARL WAGNER (by invitation).—Dr. Paddock asked where the omentum should be placed, and Dr. Kolischer replied that it should be placed in front of the uterus to cover the line of incision and suture of the uterus, in order to protect it against adhesions from the parietal peritoneum. In my opinion, the omentum belongs behind the uterus on top of the intestines, as the only and natural protective covering for the intestines. By doing this, and spreading it according to its length clear down in the pelvis behind the uterus, we establish, in cases of traumatism or infection with adhesions, two cavities, one which contains the intestines, the other which contains the uterus and appendages. In case we have omentum in front of the uterus or between the uterus and parietal peritoneum traumatism or infection of the uterus would jeopardize the patient's life greatly. We would first have to contend with adhesion of the bowel to the defective or traumatized places, and with ileus. We would have, secondly, inflammation or peritonitis in the most dangerous part of the abdominal cavity, the one which contains the intestines, with the possibility of a large mortality. While otherwise, when the omentum is behind the uterus protectively covering the intestines, infection of the uterus is outside of the intestinal cavity, between omentum and parietal peritoneum and can be dealt with by drainage or otherwise as circumstances require it, without endangering the intestinal field at all, the field of trouble being confined.

DR. CHARLES B. REED.—I would like to emphasize again, the importance of avoiding constriction of the uterus, a point I made the report of my case. I do not think modern experience demon-

strates any advantage whatever in any constriction, and I believe that is in accord with the experience of the best operators.

DR. PADDOCK.—I tried that in one case of my own, and never had such a hemorrhage in my life, and I have given it up.

DR. JOSEPH B. DE LEE.—We have all done Cesarean section, and the number will reach probably fifty or sixty. In one vaginal Cesarean section which I performed for eclampsia, with a similar result to that in two of Dr. Bacon's cases, death occurred in three or four hours. The woman continued to have convulsions the same after operation as she did before it. Would it not be well to collect all these cases, tabulate them, and study them with a view of getting statistical information?

RUDOLPH W. HOLMES, M.D., Editor of the Society.

TRANSACTIONS OF THE WASHINGTON OBSTETRICAL AND GYNECOLOGICAL SOCIETY.

Meeting of February 3, 1905.

The President, J. WESLEY BOVEE, M.D., in the Chair.

DR. I. S. STONE presented a specimen and reported a case of

SUPRAVAGINAL HYSTERECTOMY FOR FIBROMYOMATA.

The tumor contained a submucous growth undergoing necrosis. Mrs. S., white, aged 52. Mother of several children, had known of the presence of a tumor since last September. The patient is pale and anemic in appearance; has not lost much in weight, but her complexion is slightly indicative of a cachexia. She has had comparatively little hemorrhage and seeks operation because of pain in her right ovarian region, which extends through to the loins and shifts about from one place to another like a neuralgia. Her condition is one of commencing arteriosclerosis. She has a decided aortic murmur and slight stenosis. Her pulse is full and firm, and its rate 100 to 106. While the family physician, Dr. Cole, and myself, considered her condition rather unfavorable, we decided to make an attempt at removal of the growth and be guided by the effect of the anesthetic before opening the abdomen. By the day appointed for operation she developed a bronchitis which caused us to wait for an improved condition, before proceeding. On January 11 everything appearing to be in as favorable condition

as we thought possible, the operation was completed without accident of any kind. The immediate effect of the anesthesia was to cause a rapid pulse and an aggravation of the bronchitis. We were anxious about the patient for several days and pneumonia was feared. The patient is now slowly recovering and appears to have had no return of her former pain.

DR. STONE also presented a CYSTIC OVARY and atrophied Fallopian tube which he had recently removed from a patient who had previously had supravaginal hysterectomy (seven years since). He had since then (January, 1905) drained a large serous collection by vaginal route, but a return of her symptoms necessitated a complete removal of the specimen presented. There was no special difficulty about the operation and the patient is recovering nicely.

DR. BOVEE said that last winter he had removed a cystic ovary from a woman on whom Dr. Bonnifield had previously performed a laparotomy and also a vaginal hysterectomy had been done in Mexico. Dense adhesions were present. He thinks that where adhesions exist at the time of operation we should remove the ovaries.

DR. LEWIS asked just when the ovaries should be removed in hysterectomies. He removes them if they are diseased, but otherwise does not.

DR. BOVEE said that he left the healthy ovaries in women who were not over 40 years.

DR. STONE said that in his first case the woman's general condition gave the impression that she would stand the operation badly, but there were no definite signs to point to arteriosclerosis and asked the views of his hearers about diagnosing this condition.

DR. PRENTISS said that increased blood pressure pointed to early arteriosclerosis. A case of gout which he is treating showed a blood pressure of 60 mm. above normal. This was, he thought, diagnostic of arteriosclerosis.

DR. STONE said in his case the arteries were thickened and there was an aortic murmur which he thought was due to a slight stenosis.

Meeting of February 17, 1905.

The President, J. W. BOVEÉ, M.D., in the Chair.

DR. STONE presented a specimen and reported a case of

CANCER OF THE UTERUS.

The patient was aged 48, and the mother of several children. Three months ago her physician made an examination and told that her disease was not of a dangerous character, and

it was a matter of great surprise when he recently observed the rapid changes shown in the specimen. As the disease had extended into the cellular tissue on each side of the cervix, an effort was made to entirely remove all of the connective tissue adjoining the uterus and on the posterior surface of the bladder and along the vessels and ureters. The operation was made through a crescentic incision extending from one anterior spine of the ilium to the other, along close to Poupart's ligament and the symphysis pubis. With the patient in the Trendelenburg position this incision gives ideal opportunity for careful work.

DR. BALLOCH said that the growth seemed very extensive for a three months' existence and that there would probably be a rapid recurrence.

DR. BOVEE asked Dr. Stone the relation between the lacerated cervix and the cancer, and inquired how he dealt with the carcinomatous tissue in the broad ligament.

DR. STONE said that Emmet's teaching that carcinoma originated in a lacerated cervix was probably wrong. The new growth hardly ever arose in the angle of laceration but arose from one or the other cervical lip. The operation was a very difficult one, both ureters being dissected bare.

DR. BALLOCH asked if it is possible to dissect the ureter free from carcinomatous tissue, and not leave particles of the cancer behind.

DR. BOVEE cited a case of his where the ureter was surrounded by the carcinomatous extension, but the structure itself was not involved. Sampson and others state that the ureter is involved late. He (Dr. Bovee) prefers in such cases to resect the ureter.

DR. CARR stated that this dissection was similar to dissecting the large vessels of the axilla bare in metastases from cancer of the breast. In no case where he has done this has he seen a recurrence of the growth in the axilla.

In cancer occurring in lacerated cervixes it is not to be expected that the growth would arise in the scar tissue. Cancer always arises from epithelial tissue. Scar tissue tends to limit the extension of the cancer.

DR. HAGNER said that it was cutting through cancerous tissue which tended to disseminate the disease.

DR. ACKER asked if the patient was really any better off from the operation.

DR. MILLER said that it was undoubtedly true that lacerations of the cervix were a predisposing cause to cancer of the cervix. Carcinoma of the cervix was relatively much more frequent in parous women than in the nulliparous.

DR. CARR was right in stating that cancer could not arise from tear tissue. It could only arise from epithelial cells. The lacerations by exposing the cervical canal to trauma, etc., probably predisposed to cancer. He was interested to note that Wertheim had recently stated that in nearly all his cases upon which his

radical operation had been performed, where he found the glands carcinomatous, at the time of operation, the new growth had recurred.

DR. STONE does not believe that the radical operation will ever be popular. Wertheim gets very good results by getting comparatively early cases. Here we generally see the cases late in the disease. In the radical operation the cellular tissue adjoining the uterus is cleaned out. When recurrences take place it is generally in Scarpa's triangle and other distant points.

DR. ADAMS read the essay of the evening

"A STUDY OF 400 CASES OF TUBERCULOSIS IN CHILDREN."*

DR. ACKER stated that he was in the main in accord with the essayist. It is only difficult to make an early diagnosis of tuberculous meningitis. Kernig's sign has appeared early in nearly all his cases of meningitis and he thinks in consequence that it is not pathognomic of any form of meningitis.

In regard to pulmonary tuberculosis we have to differentiate between numerous conditions. Caseation of the bronchial glands gives rise to mistakes in diagnosis. The same may be said of chronic pulmonary affections following measles, pneumonia, etc.

The prognosis in pulmonary tuberculosis is fair. Children have come into the Children's Hospital in advanced stages of the disease and have improved.

Tuberculous peritonitis is probably always secondary. He does not think that the prognosis is so grave as the essayist. He recalls several cases which have been operated on and have recovered. Where there is ascites, the prognosis is fair. When the intestines are matted together, the prognosis is always bad.

DR. STONE said that in his experience tuberculous peritonitis had a very good prognosis when operated upon. It has been seen by him largely in young people and many have completely recovered. He asked if it were thought that in all cases of tuberculous peritonitis that the bacilli penetrated the intestinal wall. He does not think so because, if this were true, we would not get so many cures.

DR. BALLOCH said we must distinguish between tuberculous peritonitis and tuberculosis of the peritoneum. In the latter the peritoneum is studded with tubercles.

DR. COOK stated that if tuberculous peritonitis was nearly always secondary, curing the local lesion would not influence the primary seat of the disease.

DR. ABBE stated that when he was in the hospitals it was the rule to make lumbar punctures, and the results were at times quite striking. He recalls 2 or 3 cases which were diagnosed tuberculous meningitis which recovered after this procedure. He wondered if Dr. Adams had given it a fair trial.

*See original article, page 742.

DR. HAGNER was interested in what Dr. Adams stated in regard to the prognosis of tuberculosis of the peritoneum. He recalls a case of a child at the Children's Hospital which got entirely well after operation.

DR. MASON also recalled several cases which improved.

DR. ACKER said one case was operated upon twice by Dr. Thompson and once by Dr. Macardle and got well. He reported a case which he diagnosed tuberculous meningitis and which got well, before the Pediatric Society, and Jacobi, Holt and others had seen cases which recovered.

DR. STONE asked how long the lesions would persist. If the child died after three months would we still find pathological changes?

DR. ADAMS stated that he is probably a little pessimistic about tuberculous peritonitis, but is it an honest pessimism. He goes entirely by the records of the hospital.

The involvement of the peritoneal cavity might take place through the lymph channels or by continuity. He agrees with Dr. Balloch in the distinction which he makes. He believes few cases of tuberculosis of the peritoneum get well. Not a dozen operations have been recorded for this disease at the Children's Hospital.

Lumbar puncture as a means of diagnosis has no practical value. The diagnosis can be made before you get a report from the pathologist. Dr. De Schweinitz said it was impossible in meningitis to make a diagnosis by this means under 9 days. The cases which got well were not tuberculous meningitis but something else. Caillé and many others have given up operation for tuberculosis of the peritoneum in children.

TRANSACTIONS OF THE OBSTETRICAL SOCIETY OF LONDON.

Meeting of April 5, 1905.

The President, W. R. DAKIN, M.D., M.R.C.P., in the Chair.

A demonstration, with lantern illustrations, was given by Dr. CUTHBERT LOCKYER on the

DEVELOPMENT AND RETROGRESSION OF THE CORPUS LUTEUM,

special reference being made to the compound lutein cystomata found in association with vesicular mole and chorioepithelioma.

The author has attempted a systematic study of the normal and abnormal processes seen in the development and retrogression of the Graafian follicle and corpus luteum.

The following are among the *normal* processes submitted for discussion :

1. The development and characteristics of the theca interna.
2. The origin and features of the lutein cell.
3. The fate of the stratum granulosum.
4. The formation of the corpus luteum.
5. The retrogression of the corpus luteum, including the disruption and dispersion of the corpus albicans.
6. The regeneration of ovarian stroma.

Among the *abnormal* processes are considered the development of:

1. Lutein cysts.
2. Lutein hematomata.
3. Lutein abscess.
4. Lutein calcification.
5. Solid growths of lutein origin.
6. Excess and displacement of lutein tissue.

The author has classified lutein cysts according to their origin as follows:

During retrogression of the corpus luteum there arise	I. Cysts from cavitation of the central blood-clot. II. Cysts from displaced lutein tissue by (a) Lymphangiectases. (b) Cystic degeneration of lutein cells.
During the maturation stages of a Graafian follicle there arise	I. Lutein cysts with an epithelial lining due to persistence of the stratum granulosum. II. Lutein cysts devoid of an epithelial lining, due to absence of the stratum granulosum. III. Lutein hematomata. IV. Complication cysts. V. Lymphangiectases.

Attention is directed to the clinical importance of certain types of lutein cysts.

Relationship between excess of lutein tissue and overgrowth of trophoblast is suggested and discussed.

Mention is made of L. Fraenkel's work in connection with internal ovarian secretion and the value of "lutein" as a therapeutic agent.

A full description of four pairs of composite lutein cystomata is given. For this valuable material the author's thanks are due to Mrs. Scharlieb, Drs. Williamson and Andrewes, Dr. Carlton Oldfield, and Mr. Malcolm.

DR. H. WILLIAMSON, speaking from his own observation, while agreeing in all essential particulars with Dr. Lockyer, looks upon the fibrinous lining of these cysts not as a mere deposit of fibrin from the central blood-clot but as a greatly hypertrophied membranopropria. Nor does he believe that the lutein cells migrate from distant corpora lutea, but that they arise in situ from modification of the stroma cells. He pointed out that the pigment lutein is not a derivative of hemoglobin but a lipochrome.

DR. BLACKER thought the importance of the subject was very great and the corpus luteum might well be said to be the fashion at the present time. That an excess of lutein tissue was present in many cases of vesicular mole and chorionepithelioma was certain, but that it bore any relation to the origin of such conditions was by no means settled. Seitz had examined 36 ovaries at different stages of pregnancy, and had found in practically all of them an excess of lutein tissue such as Dr. Lockyer had described. If further observations of this kind showed that such a hyperplasia was to be found in all cases of normal pregnancy, then the view that the corpus luteum played any part in the production of either a vesicular mole or a chorionepithelioma could hardly be sustained. He inquired if control observations had been carried out on the ovaries in cases of normal pregnancy or in cases of fibroid tumors, as a very large series of such observations must be undertaken before it could be said that the presence of an excess of lutein tissue, together with a vesicular mole or a chorionepithelioma was more than a mere coincidence.

MR. J. H. TARGETT described the following case of

ABDOMINAL HYSTERECTOMY FOR SEVERE CONCEALED ACCIDENTAL HEMORRHAGE.

The patient, aged 34, had had 7 children and severe antepartum hemorrhage on the last two occasions. Bleeding commenced when 6 months gone. The membranes were artificially ruptured and a leg of the fetus was brought down. As no progress towards delivery was made, and the patient's condition was becoming worse, the vagina was plugged with gauze and the woman was removed to hospital. Saline injections were given per rectum. The uterus, which at first reached to the level of the navel, appeared to have become more distended, was irregular in outline, tense and in spite of the opium which had been given, was tender to the touch. The cervix was rigid. Supravaginal hysterectomy was decided on as offering the quickest method of emptying the uterus and of controlling the hemorrhage. Intravenous injection of saline fluid was given and some was left in the peritoneal cavity. The pulse improved. Convalescence was complicated by a small parametric abscess in front of the cervix and by thrombosis of the left leg followed by thrombosis of the right.

DR. HANDFIELD-JONES suggested that vaginal Cesarean section might with advantage have been performed in this case.

MR. TARGETT, in reply, said that in the circumstances of the case he considered that by removal of the uterus, the dual risk of post-partum hemorrhage and of sepsis was diminished.

DR. A. H. N. LEWERS showed a specimen of

CALCIFIED TUMOR IN DOUGLAS'S POUCH APPARENTLY UNCONNECTED
WITH THE UTERUS.

which he had removed by abdominal section from a woman, aged 34, who was the mother of three children. The tumor measured $2\frac{1}{2}$ by $1\frac{1}{2}$ by $1\frac{1}{2}$ inches. The surface was irregular and completely calcified for a depth of $\frac{1}{16}$ inch. The interior was tough and the section presented a grayish white appearance. The tumor was regarded as probably a fibroid of the uterus which had undergone extreme hyaline degeneration and necrosis with calcareous deposit on the surface. There was nothing to indicate its previous point of attachment.

MR. TARGETT suggested an additional source of such calcareous bodies, viz., enlarged appendices epiploicæ; but he considered that the size of the specimen shown precluded the possibility of its being a fat calculus.

BRIEF OF CURRENT LITERATURE.

OBSTETRICS.

Professional Tobacco Poisoning in Its Relation to the Reproductive Functions.—Pieraccini (*Clinica Moderna*, No. 1, 1905), observes that, from 1894 to 1903, 84 pregnant women who were workers in tobacco have been treated at the Clinic of Florence for manifestations of tobacco poisoning. Forty-nine were delivered at term; 16 had premature labor, 15 had abortion, 4 were threatened with abortion; that is 36.90 per cent. showed an interruption of pregnancy. These cases were not influenced by anemia or conditions of malnutrition, because the women were well nourished and healthy. The high percentage of interruptions of pregnancy could only be referred to the effects of tobacco. Tobacco produced abortion by tobacco intoxication affecting the infant in the uterus, causing its death, so that it acted as a foreign body and was thrown off. Or else the nicotine directly affected the muscular fibers producing uterine contractions. From minute observations of these histories the author is convinced that nicotine disturbs the course of pregnancy, but does not decrease the liability of the woman to conception.

The Blood-Producing Organs During Pregnancy and the Puerperal Period.—Francesco Varoldo (*Zent. für Gyn.*, April 8), calls attention to the hyperleucocytosis that was remarked by Virchow during pregnancy, with a hyperplasia of the periuterine lymph nodes. The spleen becomes more active at the same time. The author has made histological studies of the bone marrow, spleen

and periuterine lymph nodes of 20 dogs and 6 guinea pigs, during pregnancy and the puerperium. He examined the blood, lungs and lymph nodes as well. He observed a marked karyokinesis of the normal elements, a preponderance of mononuclear cells, and especially the degeneration of the megakaryocytes. On the 10th to the 25th day of pregnancy in dogs, the bone marrow shows increased phagocytosis of the megakaryocytes, which enclose many leucocytes. Large nuclei of megakaryocytes are in karyokinesis. There may be noticed forms with little protoplasm and easily stained nuclei. After labor the erythropoiesis and leukopoiesis are more marked. The spleen becomes enlarged, but not simply congested; the amount of the spleen pulp is increased. In some places the Malpighian follicles are enlarged, in others smaller. In the stroma the mononucleated basophile elements are most marked. The periuterine lymph nodes are enlarged, and there are many lymphocytes. The blood shows hyperleucocytosis and the polynucleated leucocytes are increased in number. The author concludes that there is a hyperleucocytosis during pregnancy, and an increase in the percentage of young red cells. This change in the blood corresponds with the lymphoid reaction and changes in the hematopoietic myeloid organs, which are increased in activity. This is shown by the increase in leucocytes and lymphocytes, the activity of the megakaryocytes, their phagocytic power, the increase of the granular myelocytes, the hyperplasia of the lymph follicles, and the appearance of megakaryocytes in the spleen and lymph nodes.

Arterial Tension a Cause of Eclampsia.—A. Mynlieff (*Zent. für Gyn.*, No. 13), advocates the idea that increased arterial tension has much to do with the production of eclampsia in pregnancy. The influence of mechanical conditions on the kidney has been remarked by many observers. Pressure on one or both ureters by the gravid uterus may cause increased tension in the kidney. Slight pressure on the ureter has been observed to have a marked effect on the circulation in the kidney, and has produced changes in the amount of secretion and of the contents of the urine. Pressure on the ureter lessens the amount of blood in the renal vein; increase in the volume of the kidney follows, and edema of the kidney ensues. The swelling of the organ is limited by the inelastic capsule; the kidney is pressed between the two forces, the blood pressure and the resistance of the capsule. Increased abdominal pressure during labor pains exerts a direct effect to cause a retention of the fatal poisonous secretions. It has been said that post-mortem dilatation of the ureter or pelvis of the kidney can be demonstrated. But this is not to be expected as a result of a transitory muscular spasm or pressure on the ureter. The pathological findings in kidneys after eclampsia are very variable; the kidney may be red, white, or much degenerated. Bar says that the kidney appears like one that had undergone rapid changes, the result of sudden accidental conditions. Perhaps the suddenly occurring condition is an increase of arterial tension. When the pressure of

the uterus is removed the kidneys experience a relief at once, since this increased tension ceases. When, after the emptying of the uterus, anuria supervenes, it has been advised to perform decapsulation of the kidney, with a view to the relief of the pressure on the kidney, and successful results are claimed by Edebohls in such a case.

Indications for Pubiotomy.—Otto v. Franqué (*Münich. Med. Woch.*, March 7), details two cases operated on by him by pubiotomy for contracted pelvis, in order to avoid perforation of the skull of the child. The indications are for this operation, instead of symphyseotomy or Cesarean section, in slightly contracted pelvis where a moderate enlargement of the pelvic ring will allow of delivery of the child by high forceps or version. When there is fever during labor, the membranes having ruptured too early, and the uterus having become infected by examinations by careless midwives, this operation with dilatation of the cervix by an inflated rubber bag permits of early delivery of a living child. It takes no longer than perforation and extraction. The great advantage is the obtaining of a living child. The pubiotomy wound is much more easily cared for and guarded against infection from the genital tract than the symphyseotomy wound.

Increase in the Size of the Pelvis Obtained by Pubiotomy.—A. Van Cauvenberge (*L'Obstétrique*, January), has sought by accurate measurements to find out the exact amount that we may expect to gain in the various diameters of the pelvis by the operation of pubiotomy. Pubiotomy consists of an artificial increase in the size of the pelvis by a section of the pubic arch at one side of the symphysis. The author has measured his cases before and after operation: First, the distance between the two anterior iliac spines; second, between the iliac crests; third, between the trochanters; fourth, from the apophysis of the last lumbar vertebra to the upper edge of the symphysis. Internally: True conjugate, diagonal conjugate, bisacro-iliac, transverse and the oblique diameters. After the operation the bones are separated from one to five centimeters on the cadaver. In the living subject the separation is somewhat greater, so that often a spontaneous labor takes place. This should not be carried out too rapidly, and it is best to make pressure with the hands or with an elastic ligature on the sides of the pelvis, to prevent lacerations of the soft parts. At the time of labor the sacro-iliac articulations are more elastic than during pregnancy. The anteroposterior diameters are at first increased only slightly; later, as the bones separate more, the increase becomes greater. The true conjugate increases a little more than the diagonal. When the bones separate 4 centimeters, the true conjugate increases 1.6 centimeters. Separation of 6 centimeters gives an increase of 1.7 to 2 centimeters. The transverse increases from 2.5 to 3 centimeters. The obliques increase 2.5 to 3 centimeters. The author believes that the question of easy healing of the wound and perfect consolidation of the pelvic basin remains undecided. An excellent result of pubiotomy is that the di-

ameters remain somewhat enlarged, a great benefit in a following pregnancy. Pubiotomy permits of delivery in a more contracted pelvis than will symphyseotomy; the smallest that can be delivered by the latter is a diameter of 6.75, while by pubiotomy the lowest limit is 6.50 centimeters. The operation is less dangerous than symphyseotomy; the bladder and urethra are undisturbed. The soft parts are thicker at the side than in the middle and hemorrhage is less.

Acute Puerperal Infection and Hysterectomy.—G. Berruti (*Giornale di Gin. e di Ped.*, Jan.) states that the mortality from puerperal infection when hysterectomy is done is greater than when the ordinary therapeutic resources are resorted to, since, at the present day, the mortality by these means reaches only 10 per cent. In cases of infection without localization, the enormous mortality when hysterectomy is done, 76.5 per cent., proves that this kind of operation is not appropriate for the condition; curetting, irrigation and injections of the serum of Marmorek give better results. Autopsy in the cases of hysterectomy, which show no localization of peritonitis, show that the operation could not be of benefit in cases of general infection. When there are remains of the placenta or of membranes after abortion, hysterectomy is useful only when executed promptly and by way of the vagina, so as to avoid the diffusion of the infection. Late operation is contraindicated. The mortality under operation is very great. With localization of the inflammation in the periuterine tissue it is better to incise and drain the pus collection. In case of retention of the placenta, emptying and disinfection of the uterus are the appropriate means of cure. In cases of suppurating fibromata, operative perforation of the uterus, or suppurating ovarian cysts, radical intervention is a necessity, but such cases are not true cases of puerperal infection. Hence, the author concludes, that hysterectomy is not generally applicable to puerperal infection.

Vaginal Hysterectomy for Cancer of the Cervix of the Pregnant Uterus.—R. Condamin and A. Condamin (*An. de Gyn. et d'Obst.*, March) say that it has been considered useless to operate on women pregnant during the course of a cervical cancer, because it was thought to be a necessarily fatal condition. The authors differ with the earlier writers in this, since it is not proved that recurrence of cancer after radical operation is always the case. It has been the practice to take into account only the welfare of the fetus. The fetus, however, is constantly menaced by the uterine cancer, by abortion, hemorrhage, and dystocia. Only 34 per cent. of infants survive when pregnancy is allowed to go on to its end. In the case of the mother we know that the existence of pregnancy aggravates the condition and renders the spread of the disease more rapid. Thirty cases are cited by the authors to show that one may hope for a radical cure after operation, if total extirpation of the uterus is done sufficiently early. Provided the parametrium is not invaded operation may be successful. Up to the sixth or seventh month hysterectomy of the pregnant uterus

does not differ much from the operation in uncomplicated cases. After that time the uterus may be easily emptied during the operation. A vaginal operation has the advantage that the operator can see just what he is doing. The chances of peritoneal infection during the operation are much reduced. The authors' résumé is as follows: 1. In the presence of an operable cancer of the cervix, complicated by pregnancy, it is the duty of the surgeon to operate; by doing a total hysterectomy the mother has a chance of being saved; the chances of the life of the fetus, in case the pregnancy is allowed to go on, are very much reduced. 2. If the parametrium is involved the mother has no chance of life, and the fetus alone need be considered. 3. In the sixth or seventh month, if delay will not endanger the mother, the pregnancy may be allowed to go to term. 4. The operation to be preferred is vaginal hysterectomy, without incision of the lateral culs-de-sac. 5. After the eighth month it is best to perform abdominal hysterectomy, on account of the size of the child.

The Status of Perforation of the Living Child as an Aid to Labor.—Rudolf Katz (*Monatsschr. für Geb. u. Gyn.*, April) defends perforation of the living child in difficult labors as it has been made use of in the Maternity Hospital of Mannheim. Veit has stated that every case that might lead to the necessity for perforation should be taken to a good hospital, and treated by symphyseotomy or Cesarean section, so as to obtain a living child. The author contends that there are cases in which it is impossible to avoid doing a perforation. Such cases are those in which the patient has been under the care of a midwife or a physician for many hours, in which many examinations have been made with unclean hands, fever has set in, or the bladder or uterus has been injured in attempts at delivery. Such cases are very unfavorable for operation of any kind, and perforation is the most rapid and promises the best results. In many cases there is a probability that the child would not live, even if successfully delivered by Cesarean section. The mortality of Cesarean section of symphyseotomy would be nil were all cases operated on when the patient was free from fever and in good general condition. But such is far from being the case in the service of a maternity hospital. The statistics of the Maternity of Mannheim give these results: Of 6,935 cases delivered, 26 perforations, 0.37 per cent.; mortality of mother, 7.69 per cent.; living child obtained in 63 per cent. The mortality of Cesarean section for the last ten years was 10 per cent. This shows the mortality of perforation to be less than that of Cesarean section. That of symphyseotomy has been given also as 10 per cent. Symphyseotomy also has the disadvantages of being far from free from danger, having a long convalescence, and being liable to cause impaired bladder functions. Another element that has to be considered is the prejudice among the public and physicians against Cesarean section. Many women who are brought to a hospital refuse absolutely to submit to a section. They cannot be forced away, and something must be done to deliver them. The

indications that were considered to justify perforation, in the 26 cases that were operated on in this way in the Maternity, were: Rise of temperature, bad general condition of the mother, eclampsia, threatened rupture of the uterus. Of twenty cases, narrowed pelvis existed in all. If a pelvis is so contracted that delivery is impossible, the patient and physician think only of a Cesarean section; if the deformity is less, they attempt delivery by other means, and often the patient is reduced to a low condition before she will submit to a radical interference. Hence, the author concludes that it is the duty of obstetricians to popularize as much as possible the idea of Cesarean section as the best method of securing a living child, but that there will still remain many cases that must be delivered by perforation, on account of the impracticability of using other means.

Experimental Hydramnion in Nephritis.—Eugene Bibergeil (*Berl. Klin. Woch.*, April 10) gives the results of experiments made on two dogs, by producing nephritis by the use of a drug, and then examining both mother and fetus as to the presence of ascites. Hydramnion is known to be the result of fetal mal-development, which results in derangements of the life processes of the mother. Nevertheless, spontaneous interruption of the pregnancy is rare. In both cases experimented on nephritis was produced in the mother, changes in the fetal kidneys, hydropsy (ascites and hydrothorax) in the mothers, a small amount of effusion in the fetuses. The amniotic fluid was increased in amount in both mothers. The author draws the conclusion that nephritis may not only produce effusion into the tissues and cavities of the mother, but may also increase the amount of amniotic fluid, and hence may be one cause of hydramnion, at the same time producing effusions in the fetus.

Etiology and Therapy of Urogenital Fistula in Women.—Oscar Vertes (*Monatsschr. für Geb. und Gyn.*, April) considers the etiological factors at work to produce a urogenital fistula, and describes 24 cases seen by him. Of these 24 cases, 20 were the result of labor, 4 of the use of pessaries. Of these 20 cases, 13 were deformed pelvises. One was narrowed relatively to the size of the child. In long labors, that have been badly conducted, the pressure on the soft parts of the pelvis produces a necrosis that ends in fistula. It is generally the pressure of the hard skull presenting that causes the necrosis. In 15 of the 20 cases the child's head presented. An operative intervention may also contribute to the formation of the fistula. Of the 20 cases, only two were spontaneous births. The use of forceps is generally necessitated. A sharp instrument used to perforate the skull may be the cause. It is difficult to tell whether the pressure of the head or the instruments was the real cause of the injury. There are several facts that go to show that the injury was by instruments: if the escape of urine begins at once after labor, it is probable that the instrumental interference was the cause. When it results from a pressure necrosis it does not appear for from 3-6 days

after delivery. Of 18 instrumental deliveries, 10 were done with forceps. Atresia of the vagina and formation of large cicatrices go to show that the instruments caused the fistula. In forceps operations the fistula occurs in the lower third of the vaginal wall, while in spontaneous delivery it occurs higher up. Usually there is a combination of pressure and violence of instrumental interference responsible for the injury. Four cases were the result of pessaries pressing too severely and too long on the vaginal walls. As to the operative treatment of these cases, kolpocleisis was the first effective operation proposed; but it was found to occasion serious complications, such as pyelonephritis and nephritis. Laparotomy has been proposed, to bring the fistula better into view. Many cases may be cured by the method of freshening the edges of the fistula and closing them. Total extirpation has been proposed, and is done in cases of women who have passed the menopause, as in two cases produced by the pessary. It seems a serious operation to propose where the menstrual life is not over, but we must remember that some of these cases are cut off from all society and all the usual forms of activity, by the severity of their injuries; and in these cases total extirpation will restore them to usefulness. Of the author's 20 cases, total extirpation was done 7 times. In 7 cases the freshening method was successful. In 5 cases no operation was attempted. Fourteen cases were cured, 4 were not helped, 1 died.

GYNECOLOGY.

Prolapse of the Uterus.—J. Henrotay (*Bull. de la Soc. Belge de Gyn. et d'Obst.*, T. XV., No. 1) records a most unusual case of total prolapse of the uterus. The patient was only nineteen years of age; her menstrual history was normal. She denied having had sexual intercourse, and had had no previous illness, save an attack apparently of erythema nodosum. She had been for eight years an ironer, standing at her work. The prolapse had been observed by her two years before consultation and had gradually become total.

Menstruation and Immature Red Blood Cells.—Teobaldo Soli (*Annali di Ostet. Gin.*, March) has examined two series of patients, making 194 examinations of the blood, in order to determine whether there is an increase of immature red blood corpuscles in the blood of menstruating females. Several authors have claimed that there is a menstrual anemia, and that to supply the place of the blood lost at the catamenia, the blood-producing organs put forth numerous immature blood cells. The first series of observations was on four women, lasting over a period of 40 days, including two menstrual periods and the time between them. Patients were selected that were normal in every way, and the examinations were made each day under the same conditions. The second series comprised 10 women, whose blood was examined before, during, and after menstruation. Out of the 194 ex-

aminations immature red blood corpuscles were found in only five examinations, from two patients. The uniformly negative results obtained are believed by the author to show that there is no output of immature red cells at the time of menstruation, but that the blood corpuscles lost are replaced by an activity of the hematopoietic organs, which form mature cells at this time as at any other period.

Hernia of the Ureter.—Carli (*Gazzetta Medica Italiana*, Anno IV., No. 40-41) tells us that the literature of hernia of the ureter shows it to be quite a rare condition. The term means the protrusion of the ureter through hernial passages. It never protrudes alone, but accompanied by a hernia of the omentum or intestine, either inguinal or crural. The ureter may accompany the hernial sac, or may be alone, or with the bladder. The author reports 3 cases, 1 a typical, genuine hernia of the ureter, another with the ureter accessory to the bladder. These cases may be classified as herniæ of the ureter alone, that is, simple hernia, or with other organs; as inguinal or crural, and the inguinal as external and internal, or direct. Simple hernia of the ureter is rare as the inguinal variety, more common as crural. Hernia of the ureter combined with hernia of the bladder is relatively frequent as inguinal, but unknown as crural. Hernia of the ureter may occur at any age, and is not common in women as a crural variety.

Gastrohysteropexy with Fixation by the Round Ligaments.—Teodoro Morisani (*Archivio di Ostet. e Gin.*, March) brings forward a somewhat new combination of operations for the fixation of the retroverted uterus. This operation differs from those practiced by other operators, in that he executes a gastrohysteropexy, making use of the round ligaments as a means of fixation. The uterus is not brought up close to the abdominal wall, nor is an adhesion produced between the two. On the contrary, there is a space left between the organ and the abdominal parietes, so as to permit a degree of mobility of the uterus. The round ligaments represent a temporary sustaining power for the uterus, to act until adhesion with the abdominal parietes shall have formed. The process has all the advantages of a gastrohysteropexy, with that of shortening the round ligaments; it is easy of execution, and avoids the dangers of silk ligatures. It relieves the train of nervous symptoms referable to retrodeviations of the uterus, and permits of the breaking up of adhesions, as well as of whatever operative interference with the adnexa is necessitated by the condition that may be found to exist.

Pseudo-ascites in Ovarian Tumors and its Clinical Significance.—Karl Hörmann (*Münch Med. Woch.*, March 21) tells us that the free fluid which is found in the abdomen in ovarian tumors is not a true ascites, but a secretion from the epithelial covering of the tumor. This secretion may lie free in the abdominal cavity, and after a time give rise to epithelial implantations on other parts of the abdomen, or it may come from a perforation due to rupture

of a cyst into the abdomen, this cyst continuing to secrete fluid which increases that in the abdomen. If this fluid is thin it may be absorbed; if it is thick and contains much mucin it cannot be. If this fluid is obtained by puncture, and is found to contain much mucin, it is from a ruptured cyst. The author describes two cases which illustrate the subject. In the first there was a large amount of fluid in the abdomen, which appeared to be the secretion from a cyst the size of a hen's egg; there was undoubtedly a pseudo-ascites. There had been a spontaneous rupture of the cyst, and a high grade of inflammation of the parietal and visceral peritoneum in Douglas' cul-de-sac. The case was at first believed to be malignant, on account of the bad condition of the patient, who was very thin, and had palpitation, and because of the rapid increase in the size of the tumor. An exploratory operation resulted in the withdrawal of the thick fluid, and the tumor was easily removed, with the happiest results to the patient. The second case had a similar appearance of malignancy, but was also proven to be non-malignant.

Prostitution in Paris as Regulated from 1872-1904.—L. Butte (*Jour. de Méd. de Paris*, April 2) gives the results, as to the lessening of the amount of syphilis, that has resulted from 32 years of regulation of prostitution in Paris. In 1873, in the houses devoted to prostitutes, syphilis attacked 30 per cent. of the inmates. In 1904 it had diminished to 0.6 per cent. This is due to better hygiene, the use of efficacious prophylactic measures, the smaller number of houses of ill fame, and the law against receiving prostitutes that are minors. These young girls are much more easily inoculated with syphilis than the older and more seasoned inmates. The latter have acquired a certain amount of immunity, and rarely become infected. Among the inmates of licensed houses of prostitution the liability to syphilis is extremely slight. Among women who are registered, but live and ply their business as they like, there is much more liability to syphilis, since they avoid the prescribed examinations as far as possible, especially when they have become infected. They may be controlled to some degree by being arrested for non-compliance with the law, and be confined in a hospital when found diseased. There were 6,031 registered women in 1904. Of those who were regularly examined, 51 had syphilis, and 148 among those arrested, that is, 199 in all. Another class is the clandestine prostitutes, especially the minors. Among 3,530 of these, in 1904, there were 349 cases of syphilis, a much larger percentage than that among those who were registered and treated. Hence it may be seen that regulation of prostitution has reduced syphilis materially.

DISEASES OF CHILDREN.

Action of Alkalies in Infant Feeding.—T. S. Southworth (*Arch. of Ped.*, Feb.) shows that in practice the theory of adding lime-water or bicarbonate of soda to the milk for the sole purpose of neutralizing its acidity is completely abandoned; for, by adding

the usual proportion, 1 ounce of lime-water in 20 of food, there is added to the milk from $2\frac{1}{2}$ to 20 times as much of the alkali as is required to make it alkaline. This disproportion is greatest in very weak mixtures. It has also been demonstrated that breast milk is faintly acid. In spite of these facts, the use of the large proportions of alkalies is often advisable. Lime-water checks the immediate action of rennet upon the whole mass of milk and makes the clotting more gradual, allowing the passage of some unaltered milk into the intestine, but leaves no large amount of alkali behind to inhibit gastric digestion. With bicarbonate of soda added to milk, the action of the rennet, hydrochloric acid and pepsin, is prevented by the antacid until this is neutralized, fluid milk meanwhile entering the intestine. The effect of alkalis thus seems to be to influence the type and place of digestion, reducing the burden upon the stomach and laying it upon the intestine.

Standardized Gruels.—In view of the food value of gruels, as well as their utility as diluents in modification of milk, H. D. Chapin (*Med. Record*, Feb. 18) has endeavored to apply the principles of percentage feeding to their preparation. He employed pearl barley boiled in a saucepan for 3 hours and strained, and rolled oats and barley and wheat flours cooked in a double boiler for 1 hour and strained. By analysis of such gruels, made with 1 and 6 ounces to the quart, at the New York Agricultural Experiment Station, the figures for the construction of the following table were obtained:

APPROXIMATE PERCENTAGE COMPOSITION OF GRUELS.

	Pearl Barley.		Barley Flour.		Wheat Flour.		Rolled Oats.	
	Pro- teids.	Carbo- hds.	Pro- teids.	Carbo- hds.	Pro- teids.	Carbo- hds.	Pro- teids.	Carbo- hds.
1 oz. to quart.....	0.14	1.34	0.195	2.093	0.331	2.161	0.262	1.669
2 " " ".....	0.28	2.68	0.390	4.186	0.662	4.322	0.524	3.338
3 " " ".....			0.585	6.279	0.993	6.483	0.786	5.007
4 " " ".....			0.780	8.372	1.324	8.644	1.048	6.676
5 " " ".....			0.975	10.465	1.655	10.805	1.310	8.345
6 " " ".....			1.170	12.558	1.986	12.966	1.572	10.014
7 " " ".....			1.365	14.651	2.317	15.127	1.834	11.683
8 " " ".....			1.560	16.744	2.648	17.288	2.096	13.352

Plain gruels cannot be made much stronger than 2 ounces to the quart; dextrinized, may be made up to as high as 8 ounces to the quart. The author has employed high proteid gruels in persistent vomiting in patients of all ages, in enfeebled digestive states of typhoid and other fevers, and in general exhausted conditions.

Vernix Caseosa, Hereditary Seborrhea and Acne of the Fetus.—L. Jacquet and Rondeau (*La Presse Méd.*, March 18) consider the three above mentioned conditions as related to one another and to the genital development of the infant. Excessive sebaceous function may be observed during intrauterine life, and vernix caseosa, which varies much in its presence, amount, systematic arrangement, texture and consistence, is one manifestation of this

overaction of the sebaceous glands. It is composed of cells, free fat and lanugo hairs. It occurs in the regions in which the hairs are most developed. Often in the fetus, after the seventh month, and in infants at term there is a true sebaceous miliary acne, occurring all over the body. The evolution of this condition begins at the fourth month of intrauterine life, and goes on up to birth. The authors conclude that the vernix finds its explanation in an abundant pilosebaceous activity connected with a crisis of genital evolution, since this increase of function takes place during the active development of the genital organs. They also believe that there is an element of heredity about it, inasmuch as many mothers have seborrhea, and their infants show the same lesions. The increase of sebaceous activity during the development of the genitals of the unborn infant is analogous to the same condition observable at puberty.

Facial and Hypoglossal Paralysis After Natural Labor.—Arthur Stein (*Zent. für Gyn.*, March 18) describes a very rare case observed by him, and examines its cause. The infant was born at full term, after natural labor, the mother having no pelvic deformity, and the child's skull showing no disproportion to the pelvic measurements. At birth the child showed a marked swelling over the left mastoid process, which he considers to have been a true hematoma. There was a left facial paralysis and a paresis of the left hypoglossal nerve, shown by inability to move the tongue evenly. The facial paralysis was cured in 8 days after birth, while the hypoglossal paralysis existed up to the thirteenth day. The author believes the condition to have been due to long pressure of the skull at the exit of the facial nerve against the pelvic bones. He finds only two similar cases reported in literature, by Schultze. The facial paralysis was due to pressure external to the skull, but there was, at the same time, pressure within the skull, and an internal hematoma, near the exit of the hypoglossal nerve, which resulted in the lingual symptoms. The hypoglossal paresis could not be accounted for by external pressure alone, but the internal hematoma must have been of very slight extent not to have involved other nerves.

Physical Signs in Infants and Children.—S. McC. Hamill and Theodore Le Boutillier (*Jour. Amer. Med. Assn.*, Jan. 7) have made a systematic study of certain physical signs found in the chest in infancy and childhood. 1. They find as a normal manifestation, constantly present up to 9 or 10 years, and not infrequently until the 13th, an area of impaired resonance under the inner third of the left clavicle. This varies in degree in different individuals, and is difficult to elicit in early infancy. It occasionally extends outward to the midclavicular line, gradually decreasing, and downward to the first interspace, sometimes blending with the area of cardiac dullness. 2. Concerning the area of transmission of the bronchial type of breathing, they state that this is ordinarily heard over the root of the lungs and varies greatly in different children. Posteriorly it is usually limited to

the interscapular space and suprascapular fossa. It is often conveyed to the entire scapular area and can sometimes be heard just above and in front of the angle of the scapula, about in the posterior axillary line, as a high-pitched, distant, bronchial murmur simulating the breathing over consolidated lung. When heard here it is usually bilateral if the child is in a position which renders breathing equal on the two sides. It is much more common in children under 6 than later. 3. Regarding position of the infant during percussion, it is emphasized that when the child is so examined, while lying on one side in intimate contact with the bedding, the elasticity of lower side of the chest is destroyed, the lung compressed, and the height of pitch of the percussion note on that side is greatly increased. 4. In examining 275 cases the writers found that up to the sixth year the apex beat of the heart is more commonly in the fourth intercostal space and the midclavicular line; after this period it is usually in the fifth space in or just within the midclavicular line. Occasionally it was found in the fourth space even until the twelfth year. 5. In determining the area of cardiac dullness in 191 cases they concluded that the average outline for children under 3 years of age is: Upper border, second rib; right border, midsternum; left border, just without the midclavicular line. From the third to the sixth year: Upper border, the upper border of the third rib; right border, midsternum; left border, in or just without the midclavicular line. From the sixth to the twelfth year: Upper border, third rib; right border, from the midsternum to the right edge of the sternum; left border, most commonly in the midclavicular line. 6. The venous hum was studied in 226 cases; in 36 of these it was loudest over the left jugular vein, in all others over the right. In 38 instances it was heard over both jugulars, under the right clavicle, in the suprasternal notch and over the manubrium. In some cases it was heard along the right border of the sternum down to the second costal cartilage. In only 10 was it audible when recumbent. The frequency of its occurrence over the manubrium in cases with entire absence of other signs of enlargement of the bronchial lymph nodes would show its unreliability as an indication of the latter condition. The extensive distribution of the hum necessitates careful differentiation from cardiac murmurs. 7. Functional cardiac murmurs were studied in 267 cases and in another series of 34 under 3 years of age. They emphasize the point that in the breast-fed children there were no murmurs, although in two instances the hemoglobin was as low as in the others which showed murmurs. This they regard as pointing to the dependence of the murmurs not upon anemia, but upon nutrition. Contrary to the usual belief that functional murmurs are rare under 3 years of age, they were heard in 20 of the 34 cases.

Strain of the Heart in Growing Boys.—During his work at Harrow, Arthur Lambert (*Med. Chron.*, Feb.) has studied this subject in regard to the relation of physiological distention to pathological dilatation and the prognosis in cases of the latter due to

physical exertion. The primary effects of heart strain are: chronic hypertrophy and dilatation, gradual dilatation, or acute dilatation. Symptoms identical with those of strain may be produced by direct violence or nervous shock, as is shown by cases reported. The view that the progression is from physiological to pathological dilatation does not seem borne out. The onset seems to be sudden. Two points observed by the writer in the community of 600 boys at Harrow are that cases of heart strain are of infrequent occurrence, and that their appearance bears no relation to the severity of the strain to which the boys have been exposed. The schoolboy heart breaks down as the result of exertion, not because the strain is too severe for the hearts of boys of that age and physical development, but because the individual possesses some cardiac insufficiency, either primary or inherent, or dependent upon some condition such as anemia or influenza. There is a tendency to recurrence of the dilatation in the subjects, and the prognosis should be guarded and each step of renewed active exercise be watched carefully. The writer believes that pathological dilatation of the heart of the growing boy from strain, however short its duration, and however complete its apparent cure, leaves its indelible mark upon the mechanism of the heart, and that its effects have to be regarded as an existing factor of greater or less degree, sufficient perhaps to determine the failure of the heart under an anesthetic, or to decide whether in some acute illness the resultant of the forces acting in and on the patient shall take the direction of recovery or of death. Where cardiac disability is due to damage of a valve alone, and the myocardium is sound, the heart is able to accommodate itself, by dilatation, to the larger output necessary to compensate leakage, and by hypertrophy to the increased work entailed; whereas in the case of the strained heart, the seat of incompetence is the myocardium, and this being faulty no factor can compensate for the defect.

Etiology and Pathology of Hepatis Cirrhosis in Infants.—L. M. Spolverini (*Revista di Clin. Ped.*, April) draws attention to the general belief in the rarity of hepatic cirrhosis in infants. He believes that this condition is much more common than is generally thought. Perhaps it is not as generally diagnosed during life as in the adult. The liver of an infant reacts differently to the various poisons that enter the system, and hence the same poisonous effects may not be produced as in the adult. The causes of cirrhosis of the liver in the child are as follows: 1. Cases of infective origin, arising from syphilis, tuberculosis, malaria and biliary poisoning. 2. Toxic cases, from alcohol, dyspepsia and splenomegaly. 3. Mechanical, that is, circulatory cases. The most frequent cause is syphilis. Malarial cirrhosis is rare, as is the circulatory form. It has been supposed that alcoholic cirrhosis is rare, on account of the age of the child. The author has had 2 cases, and has reason to believe that among the poorer Italians, especially of the Campagna, it is the habit to give wine to children with their food, as well as to quench thirst at night. The

dyspeptic form is rare, notwithstanding the frequency of digestive disturbances, owing to the resistance of the child's system to poisons that enter through the intestine. The author had 1 case of hypertrophic cirrhosis, of toxo-infective form, resulting from a very extensive eczematous trouble.

Hysterical Vomiting in Children.—G. Carrière and C. Dancourt (*Le Nord Méd.*, Feb. 15) state that hysterical vomiting in young children is quite frequent. The diagnosis is not easy, and must be made by excluding all other forms of stomach trouble. It is characterized by repeated vomiting, occurring soon after feeding, a part of the meal taken being rejected unchanged from the stomach. There are no abnormalities of the gastric juice; pain is unusual, and other symptoms are wanting to show any serious stomach disturbance. The kind of food taken makes no difference, and in some cases the most digestible forms of nourishment are rejected and candy and cakes are retained. The infant seems to do it voluntarily and does not seem to suffer from the loss of the food. If the condition is not treated as a hysterical manifestation it goes on to incoercible vomiting, nutrition gradually fails, and fatal complications may ensue.

Syphilitic Coryza.—Paul Gastou (*Revue d'Hygiène et de Méd. infant.*, III, 1904) describes syphilitic coryza as one of the earliest and most frequent symptoms of congenital syphilis. He gives a very vivid picture of the afflicted child. The coryza may appear in two or three days after birth, but usually in the second or third week of life. It is noticed first from the difficulty of nursing and respiration, before the discharge appears, because the affection occurs first in the post nasal space, and the discharge runs down the throat. After a week it advances to the anterior nasal tissues and there is a seropurulent discharge, fetid and mixed with blood, running over the upper lip and excoriating it, as well as the lower one and the chin. Black scabs and red fissures in the skin appear over the scarlet skin. When the child sits up it can breathe, but as soon as it lies down it strangles, becomes purple in the face and nearly suffocates; sleep is impossible and suckling almost so. There is often spasmodic cough and vomiting or dysphagia. Diarrhea and asthenia soon are added. The mucous membrane becomes entirely changed in appearance; the epithelium becomes cylindrical and lymphoid tissue appears abundantly under the surface. There are many complications, mechanical, reflex, toxo-infectious, of near and distant organs, ending frequently in the death of the patient. The treatment includes cleansing the nasal spaces, disinfecting them, and preventing complications, as well as antisiphilitic medication of the mother and the child.

Partial Diphtheritic Paraplegia.—C. Aubertin and L. Babonneix (*La Presse Méd.*, Feb. 8) says that the patellar tendon reflexes are always abolished in diphtheritic paraplegia, even in those slight forms in which there is only a slight weakness of the extremities and uncertainty in the gait, not confining the child to bed. The abolition of the reflexes is the earliest symptom of the

paraplegia, preceding the others by about one week, and continuing for some time after the paralysis has passed away. It may be the only symptom, combined with a paralysis of the palate. In the absence of lesions of the nervous system in infectious diseases, the reflexes are always normal. Hence the symptom is of great importance as indicating a lesion of the nervous system, evidences of which may be expected in the form of paralysis. In 15 cases of paralysis of the palate the authors found absence of reflexes in 5. It occurs only in late forms of diphtheritic paralysis. The writers believe that this symptom is the expression of a very mild poliomyelitis.

Dilatation of the Heart in Diphtheria.—Hans Dietlen (*Munch. Med. Woch.*, April 11) draws attention to the numerous autopsies in cases of death from diphtheria in which dilatation, especially of the left ventricle, is found. The condition is also frequently diagnosed during life. Diphtheritic myocarditis sets in during the first half of the second week of the illness, and goes on to marked dilatation of the heart. This dilatation increases gradually, from the beginning of the myocarditis, without much change in the pulse, and reaches its highest degree in the third week of the disease. It is accompanied by diffuse apex beat, visible pulsation, lack of clearness of the heart tones, accentuation of the pulmonary second sound, with a blowing systolic murmur. The dilatation passes away in the same gradual manner, in from 8 days to 4 weeks. In some cases it does not entirely disappear. The degree of pulse change is no index of the amount of dilatation, nor does percussion tell perfectly its extent. The author measures the heart's size and records it orthographically, in the form of a chart. The measurements are to be made with the child lying on his back on a table, as the sitting posture prevents correct measurements. Of 47 cases measured in this way, 20 showed myocarditis of a marked degree.

Results of Prophylactic Inoculation with Diphtheria Antitoxin in the Mariahilf Hospital at Aachen.—F. Wesaner (*Munch. Med. Woch.*, March 21) gives the results of his use of diphtheria antitoxin as a preventive of diphtheritic infection from 1895-1904. His observations were made on children in non-infectious wards, in wards devoted to measles, scarlet fever and whooping-cough, in which the diphtheritic infection was brought in by visitors, and on the children of families one member of which had been brought to the hospital for treatment for diphtheria. It is his custom in such cases to urge the parents to permit immunization of all children in the family under 15 years of age. His conclusions are these: 1. Prophylactic injections are of use in preventing the spread of diphtheria in the city. 2. The protection is not absolute; it does not render isolation useless, but it need not be so severe. 3. The time of protection lasts about 3 to 4 weeks. 4. When protected persons suffer from diphtheria, either in spite of the protection, or from its being too late, the disease is of a very light form. 5. For small children 200 units is sufficient, but 300-400

units is better. 6. For cities, from both a hygienic and a pecuniary standpoint, it is worth while to give free preventive inoculation.

Death in Acute Diphtheritic Toxemia.—Chas. Bolton (*Lancet*, Feb. 4) says that the clinical aspect of the disease shows that death in acute diphtheritic toxemia is due to primary heart failure. To account for this, extensive fatty degeneration is found in the heart and acute degeneration in the motor nucleus of the vagus. It is quite likely, as all signs of degeneration are found at the same time, that both irritative and paralytic effects in the vagus may be felt by different portions of the heart at the same time, and that in some cases an irritative effect may preponderate whilst in others a paralytic effect may be chiefly evident. The probability is that irregularity of action would be the prominent feature that this irregularity would be subject to great variations in degree, and that in some cases a slowing of the pulse might be expected and in others an increased frequency. The cardiac dilatation is the result of weakness of the heart wall. The irregular pulse and fatal syncope of acute diphtheritic toxemia are therefore due to the disturbed innervation of an acutely degenerated heart. The heart failure exhibited in the acute stage by patients who recover is probably the result of similar though less extensive changes. At a later stage of the disease the results of these changes, together with interstitial cellular infiltration, are sufficient to produce a latent weakness of the heart which can be brought into evidence by some strain, and in this stage, also, degeneration of the vagus nerve probably plays a not unimportant part.

Infectivity of Scarlet Fever.—W. T. G. Pugh (*Lancet*, Feb. 4) says that the evidence that infectivity lies not in the desquamating cuticle but in the throat and nasal cavities is decidedly strong. In scarlet fever, therefore, as in diphtheria, it must be impossible to ascertain definitely by clinical means when the patient has been freed from infection. It must not be assumed, however, that prolonged infectivity is the rule; it is probable that the majority of patients are free from infection at the end of the minimum periods of isolation usually prescribed—6 weeks for scarlet fever and 4 weeks for diphtheria. It would seem impossible to discover by clinical means the minority who retain infection longer, and difficult even to differentiate those by whom transmission of infection is likely. The impression derived from experience has been that such transmission is especially liable to occur from those who suffer from rhinitis at the time of their discharge or have suffered from this complication during their period of isolation, and this impression has been supported by statistics whenever subjected to that test. A nasal discharge, therefore, while not to be regarded as proof that the patient continues infectious, is a symptom to be viewed with considerable suspicion, for if the contagium is still resident in the mucous membrane of the nose it will unfailingly act as a vehicle for its distribution.

Experimental Measles.—Ludwig Hektoen (*Jour. of Infections*

Diseases, Mar. 1) reviews the literature of inoculation of measles, showing that the recorded cases in which this has been attempted are mostly without significance. In his own experiments especial care was taken to exclude natural infection. Case 1. Blood of a boy of 9 years, who developed mild but typical measles before desquamation from uncomplicated scarlet fever ended, was withdrawn on the fourth day. Of this 4 c. c. were added to 50 c. c. of a mixture consisting of peptone broth, 2 parts, ascitic fluid heated to 55° C. for 54 minutes, 1 part. This was placed in an incubator at 37° C. for 24 hours. The flasks and subcultures remained sterile as far as demonstrable by ordinary methods; 4 c. c. of the above culture were inoculated under the skin of a healthy medical student just finishing desquamation after uncomplicated scarlet fever, who was in an institution which was then, previously, and subsequently free from measles. Typical measles, but without respiratory symptoms, developed. Case 2. An Irish servant-girl, 21 years old, had just passed through uncomplicated measles. Thirty hours after the appearance of the rash blood was withdrawn and treated as in the former case. The experimental inoculation was almost identical with the one described, and mild measles developed. The writer's conclusion is that the virus of measles is present in the blood of patients with typical measles some time, at least, during the first 30 hours of the eruption; that the virus retains its virulence for at least 24 hours when such blood is inoculated into ascites-broth and kept at 37° C. In this way the virus of measles may be obtained for study unmixed with other microbes.

Cerebrospinal Meningitis.—Francis Huber (*Arch. of Ped.*, Feb.) presents a clinical report of 100 cases of this disease observed during the epidemic of 1904 in hospital practice. Among the features noted was the fact that in only three cases was there a prodromal period, a sudden onset being the rule. The pulse was usually slow in adults, but in children it was extremely rapid. No prognostic value can be attached to sudden falls of temperature. Among the curious symptoms was an abnormal growth of hair over the extremities and body during the two and a half months preceding the discharge of a case which lasted six months and resulted in chronic hydrocephalus and persistent opisthotonus. In one case the diplococcus intracellularis was detected in the cerebrospinal fluid within eight hours from the onset; in others, within ten or twelve hours. The patients came from all sections of the city, usually not more than one from the same house or family, though more than a dozen exceptions to this rule came under the writer's observation. In malignant cases death occurs within 24 to 72 hours, and treatment is of little avail. Anomalous and abortive cases may recover rapidly even after a severe onset. Each case must be judged by itself. Maintenance of the strength by nourishment and nursing is most important. Symptoms must be treated as they arise. Lumbar puncture relieves some symptoms temporarily. Lysol injections proved ineffectual in a few experimental cases.

Polyuria and Urinary Elimination in Cerebrospinal Meningitis.

—M. Loeper and X. Gouraud (*La Presse Méd.*, Feb. 1) call attention to the marked polyuria and increase in elimination of solids that occur in cerebrospinal meningitis. Polyuria is the rule, while albuminuria is rare. Casts do not exist, but some polynuclear leucocytes and some red blood corpuscles are found. The specific gravity is diminished or normal. Polyuria is not found in the other febrile infectious diseases. In them, with the fever we find decrease in amount of urine. Cerebrospinal meningitis is peculiar in this respect. The urine is clear, with no sediment, slightly albuminous or not at all so, density and concentration diminished. Urea is increased; chlorides vary; phosphates are increased. In the other infections elimination is delayed, but in cerebrospinal meningitis it is increased in rapidity, methylene blue appearing rapidly in the urine. Glycosuria has been observed. There is an excitation of the different productive and eliminative organs, which the authors believe to be of nervous origin, the result of bulbar disturbances consequent on the meningeal inflammation. They think that the peculiar conditions of urinary function that have been observed in cerebrospinal meningitis are of diagnostic value.

Treatment of Epidemic Cerebrospinal Meningitis.—Hermann Lenhartz (*Münch. Med. Woch.*, March 21) details his experience with lumbar puncture in the early stages of cerebrospinal meningitis. He cites four cases of considerable severity, in all of which the diplococcus of Weichselbaum was found in the fluid removed by the first lumbar puncture. The lumbar puncture was made in the early stage of the disease, and the symptoms rapidly improved. In one case all the symptoms had subsided by the eighth day after the first puncture. He also cites the case of a young man who was having attacks of slow pulse and heart failure, with other very unfavorable symptoms. On the fortieth day lumbar puncture was done for the first time, and was repeated several times. Improvement at once commenced, and the patient sat up for the first time on the sixty-seventh day, and entirely recovered. The author has never seen any bad effects from the procedure. He punctures every day or every other day, and withdraws only a small amount of fluid at each sitting. He believes this treatment should be begun as soon as the first serious symptoms occur, in order to get the best results.

Relation of Human and Bovine Tuberculosis.—An interesting review of the recent literature on the relation of human and bovine tuberculosis, by David Bovaird (*Med. Record*, Feb. 25) is summed up in these conclusions: Human tuberculosis can be transmitted to cattle, but with difficulty, and it seems highly improbable that such transmission plays any great part in the production of the disease among cattle. Bovine tuberculosis can be transmitted to man, but the evidence that such transmission occurs under ordinary circumstances is extremely scanty, and it is very

unlikely that such transmission is an important factor in the spread of the disease in man.

Results of Eye Strain in Children.—Allen Greenwood (*Bost. Med. and Surg. Jour.*, Feb. 23) urges the importance of considering eye strain as an important factor in all children who are backward in their studies. He has recently shown that the majority of feeble-minded children have marked errors of refraction, and this is true to a less degree of backward children.

W. H. Kilburn (*Bost. Med. and Surg. Jour.*, Feb. 23) calls attention to the production of scoliosis by eye strain through the unnatural position which the child assumes while reading and writing. Eye strain and scoliosis act and react upon each other. It is only by correcting both that the patient can be materially helped.

Hypotonia of the Muscles in Childhood.—W. G. Spiller (*Univ. Penn. Med. Bull.*, Jan.) reports what appears to be an example of myatonia congenita as described by Oppenheim. The infant did not seem to notice things when five months old, and was never able to hold anything in his hand. No change in weakness had been noticed since birth. When seen at 22 months of age the child was apparently well nourished, but the muscles were soft and flabby. The foot could be placed behind the head without discomfort. Muscular power was much diminished; the sitting posture was maintained only a short time and only when balanced. Death occurred a few months later. Microscopic examination showed that there was an arrest in the development of the muscle fibers, and that the central nervous system and peripheral nerves were normal. The hypotonia was still present twenty hours after death, as was shown by absence of post-mortem rigidity. Oppenheim repeatedly observed improvement in such cases.

Radiography and Hip Disease.—As the result of *x*-ray examinations of 100 cases of hip-joint affections, R. W. Lovett and Percy Brown (*N. Y. Med. Jour. and Phila. Med. Jour.*, Jan. 28) conclude that a radiograph free from abnormal appearances does not show that hip disease is absent or will not develop, but that in a case of doubtful clinical diagnosis a normal *x*-ray is a matter of weight and makes the likelihood of speedy recovery greater than will a radiograph with abnormal appearances. The existence of slight atrophy of bone and slight diminution of shadow, while on the other hand, not showing that hip disease is present in a case of doubtful clinical diagnosis, makes the likelihood of it greater and the outlook rather more serious.

INDEX.

A

	PAGE
Abdomen, treatment of gallstones or pathological conditions in the, when operating for pelvic disease. Wells.....	376
Ablation of the appendages, development of fibroids of the uterus after. Bovee	272
Abortion, criminal. Reed.....	391
sequelae and treatment of. Keyes.....	348, 357
tubal, specimen. Paddock.....	522
Abscess, double tubo-ovarian. Brown.....	808
ovarian, hysterosalpingo-oophorectomy for. Boldt.....	365
ovarian, relation of, to tubal. Watkins	387
ovarian, large, on left side. Boldt.....	369
tubal, effect of on the ureter. Young.....	707
tubo-ovarian	369
tubo-ovarian. Brown	366
Adams. Study of cases of tuberculosis in children.....	742, 842
Adenomyoma, origin of uterine. Williams.....	271
Adrenalin in gynecological and obstetrical work. De Seigneux.....	707
Albuminuria of pregnancy. Stewart.....	74
Alcoholism, chronic, in infants. Berghinz.....	575
Alkalies, action of, in infant feeding. Southworth.....	854
Allen. Cases of eclampsia.....	155
Amenorrhea. Mondy	420
Anencephalus. Paddock	819
Anesthesia, rupture of extrauterine pregnancy during. Kuntz.....	387
Angioma, subcutaneous, in infants. Besson.....	140
Antitoxin, diphtheria, inoculation with. Wesaner.....	860
Appendix, diseased. Fry.....	399
perforated. Grad	134
Appendicitis. Oliver.....	274
diagnosis by rectal examination.....	712
Arthritis, puerperal. Morse.....	685
Asthma, bronchial, in infants and children. La Fetra.....	570
Ateleosis	709
Atonia, congenital muscular, of Oppenheim. Berti.....	566
Atresia, vaginal, complicating labor. Hirst.....	641, 676
Axistraction in obstetric practice. Jacobson.....	290

B

	PAGE
Bacilli, pseudodiphtheria. Saul.....	718
Bacon. Nonoperative treatment of eclampsia.....	455
Balloon, Champetier de Ribes. Voorhees.....	9
Barrows. Shock and hemorrhage as causes of death following abdominal operations.....	511
Basham. Pregnancy complicating fibroids.....	69
Beyea. Technique of ventrosuspension of the uterus.....	462
Bissell. Uterine fibroids.....	255
Bladder, foreign bodies in the. Kubinyi.....	562
Bleeding, uterine, treatment of. Bolt.....	279
Bodies, foreign, in the eyes of children. Stephenson.....	429
Boldt. Carcinoma uteri; vaginal hysterectomy.....	370
Degeneration of ovary, causing metrorrhagia.....	368
Extrauterine pregnancy, with symptoms, cases.....	363
Fibrosarcoma; panhysterectomy.....	367
Hysterosalpingo-oophorectomy for ovarian abscesses.....	365
Intraligamentous myofibromata; puerperal sepsis.....	367
Myofibroma; hysterectomy.....	370
Nephrectomy for pyonephrotic kidney.....	369
Resection of uterus and ligament with thrombosed vessels.....	368
Rupture of cervix and uterine segment; hemorrhage; abdominal section.....	505
Treatment of uterine bleeding.....	279
Tubo-ovarian abscess; vaginal operation.....	369
Bonney. Investigation in causation of puerperal infections. Results.....	402, 403
Breast, functions of the. Rommel.....	697
Brettaufer. Eclampsia in twin children.....	116
Deaths from intestinal obstruction after abdominal section.....	508
Brodhead. Treatment of obstetric hemorrhages.....	183
Bronchi, post-operative complications involving the. Miller.....	445, 545
Brothers. Parovarian cyst.....	112
Broun. Extrauterine pregnancy.....	689
Fecal fistula.....	689
Pelvic diseases of insane women.....	208, 256
X-ray pictures of renal calculi.....	253
Double tubo-ovarian abscess; complete hysterectomy.....	808
Tubo-ovarian abscess; hysterectomy.....	806
Tube and ovary removed through the vagina, for pyosalpinx.....	806
Bougie, interruption of pregnancy with the. Jacoby.....	558
Bovée. Sphere of Gynecology.....	1
Bowel injury. Hessert.....	26
Boyd. Abdominal panhysterectomy.....	137
Fibroid of the broad ligament.....	138
Byford. Technic of aseptic operating.....	281

C

Calcification of the tubal fimbriae. Wagner.....	562
Calculi, renal, x-ray pictures of. Brown.....	263
Cancer of the cervix complicating labor. Spencer.....	135
of the fundus, diagnosis of. Robb.....	92
of the uterus, diagnosis of. Hall.....	371
fibroid tumor of the uterus as a cause of. Goffe.....	500
treatment of. Robson.....	420
of the uterus. Stone.....	849
of the cervix, vaginal hysterectomy for.....	840

	PAGE
Cancer of the uterus, hysterectomy for. Watkins.....	386
of the ovary. Lockyer.....	138
Carmalt. Complicated uterine fibromyoma.....	130
Catheter, self-retaining. Wetherill.....	42
Cervix, cancer of the. Spencer.....	135
digital dilatation of the. Koppe.....	559
myofibroma of the. Dudley.....	385
Chambers. Problems presented to the gynecologist.....	274
Champetier de Ribes balloon, modified, use of. Voorhees.....	9, 120
Children, schools for, defective. Clark.....	426
treatment of hernia in young. Mummery.....	141
Cholecystitis, acute, in the puerperium. Vineberg.....	374
Chorea, diagnosis of mental symptoms of. Ruppel.....	711
Chorio-epithelioma. Lockyer.....	421
Chyluria complicating pregnancy. Leicester.....	691
Cirrhosis, hepatic, etiology and pathology of in infants. Spolverini.....	858
Clark. Origin of multilocular ovarian cysts.....	539
Cloves, use of oil of.....	434, 440, 532
Coe. Sudden elevation of temperature during labor.....	809
Congdon. Suture and ligature material.....	47
Coryza, acute in babies. Massei.....	714
syphilitic. Gaston.....	859
Cragin. Tubo-abdominal gestation.....	235
Cryptorchidism. Holmes.....	526
Cumston. Life and works of Paul Portal.....	779
Curettage, perforation of the uterus during. Hessert.....	26, 124
Curette, uterine. Kelly.....	662
use and abuse of. McReynolds.....	773
Cyst, dermoid, of the ovary. Tate.....	137
dermoid, complicating labor. Thompson.....	87, 128
dermoid, removal of. Sutcliffe.....	58
ovarian. Watkins.....	663
ovarian, typhoidal, infection of. Zantschenke.....	419
parovarian, with twist of the pedicle. Brothers.....	112
Cysts, multilocular ovarian, origin of. Park.....	539
parovarian, torsion of. Vanverts.....	705
Cystadenoma of the pancreas; removed by abdominal section. Dunning.....	101
Cystocele, operation for. Wood.....	223
vaginal, operation for cure of. Groves.....	408
Cystoma, double symmetrical. Dauber.....	137

D

Dauber. Double symmetrical cystoma.....	137
Death, sudden and unexpected, in children. Tubby.....	715
Decapitation, transverse presentation, requiring. Miller.....	685
Decapsulation of the kidney for chronic nephritis. Caille.....	424
Deformities, common, of the spine. Taylor.....	143
Degeneration fibrocystic, of the ovary, causing hemorrhage. Boldt.....	368
De Lee. Theories of eclampsia.....	325
Cases of Cesarean section.....	738
Dermoid, retrorectal, of the pelvic tissue.....	235
Dickinson. Ventral fixation and labor.....	238
Digestion disturbances from use of too high fats. Holt.....	422
Dilatation, digital, of the cervix. Koppe.....	559
rapid, of cervical canal; methods of. Stöckel.....	704

	PAGE
Diphtheria, dilatation of the heart in. Dietlen.....	860
Disease, gastroenteric, influence of laboratory feeding in. Ladd.....	423
Hodgkin's	425
pelvic, treatment of gallstones or pathological conditions when operating for. Wells.....	376
tuberculous, of the uterus. Sutton.....	409
hip; results after examination. Lovett and Brown.....	864
Disinfection of the hands. Schaeffer.....	419
Dodds. Rupture of tubal pregnancy during examination.....	521
Dudley. Myofibroma of the anterior cervical wall.....	385
Dunning. Pelvic inflammation.....	214
Cystadenoma of the pancreas.....	101
Dysenterial bacillus, intestinal infection by. La Fetra and Howland....	287
Dysentery, bacillus. Holt.....	708
infantile. Knox.....	707
Dyspepsia, chronic intestinal, of children. Blackie.....	568
Dystocia, Cesarean section for. Hubbard.....	317

E

Eclampsia, arterial tension a cause of. Mynlieff.....	847
cases. Allen	155
lumbar puncture in. Henkel.....	558
nonoperative treatment of. Bacon.....	455
researches concerning. Veit.....	557
theories of. De Lee.....	325
treatment of. Reed.....	331
treatment of, in pregnancy, by parathyroidine. Vasale.....	699
in twin children. Brettauer.....	116
Edema, congenital trophic. Grünbaum.....	712
Embolism in the puerperium. Richter.....	720
Emmet. Double fibromata of the ovaries.....	237
Encephalo-meningocele. Haggard	281
Endocervicitis, yeast treatment of. Schiller.....	635
Endometritis, membranous. Lawrence.....	419
Enterostomy. Long.....	266
Enuresis. Ostheimer and Levi.....	713
Encephalia, specimens of. Lewis.....	202
Ergot, use of, during labor. Prüssmann.....	559
Etiology of urogenital fistula in women. Vertes.....	851
Ewing. Toxemia of pregnancy.....	145
Exhaustion, nervous, in infants. Northrup.....	426
Eye strain in children, results of. Greenwood.....	864

F

Feeding, laboratory, influence of, in gastroenteric disease. Ladd.....	423
Femur, fracture of the, in a hemophylic. Monsarrat.....	428
Fermentation in milk, influence of sugar on. Russell.....	423
Ferments, soluble, feeding of the child. Bertino.....	717
Fetus, decomposing, removal of. Sutcliffe.....	58
macerated, morbidity in the puerperium after birth of. Kotken..	416
and feverishness in children. Chapman.....	426

	PAGE
Fever and puerperal, prevention of. Dörfler.....	698
puerperal, serum therapy of. Peham.....	560
puerperal, streptococcic, treatment of. Foulerton.....	418
rheumatic, infective nature of. Poynton.....	139
typhoid. Oliver.....	274
scarlet, infectivity of. Pugh.....	861
Fibroid of the broad ligament. Boyd.....	138
Fibroids in women under thirty. Waite.....	805
pregnancy, complicating. Basham.....	69
supravaginal hysterectomy for. Tate.....	282
of the uterus, development of, after ablation of ovaries. Bovée.	272
uterine. Bissell.....	255
Fibroma, frequency of hemorrhage from. Pace.....	563
Fibromata, double, of the ovaries. Emmet.....	237
Fibromyomata, uterine. Pinard.....	563
of the uterus. Lewis.....	342
Fibromyomata, supravaginal hysterectomy for. Stone.....	839
Fibromyoma, complicated uterine. Carmalt.....	130
Fibrosarcoma. Boldt.....	367
of ovary. McLean.....	807
Fimbriæ, calcification, of the tubal. Wagner.....	562
Fistula, fecal. Broun.....	689
Fistula, urogenital, in women. Vertes.....	851
Fixation of the uterus. Morisani.....	853
Fixation, ventral, Cesarean section following. Smith.....	477
neutral and labor. Dickinson.....	238
Fluid, amniotic, infection of the. Cova.....	699
Forceps, application of, in contracted pelvis. Sothoron.....	336
obstetric, history of. Partridge.....	765
Foulerton. Investigation in causation of puerperal infections....	402, 403
Fracture of the femur in a hemophylic. Monsarrat.....	428
Fry. Diseased appendix.....	399
Fundus, cancer of the. Robb.....	92

G

Gallstones, cases of. Mayo.....	265
Galvanocautery. Spencer.....	138
Gastrohysteropexy with fixation. Morisani.....	853
Gestation, abdominal. Sturmer.....	282
ectopic. Stone.....	397
extra ovular. Maci and Moncany.....	558
tubo-abdominal. Cragin.....	235
Glycosuria, natural and experimental, in mother and fetus. Merlotte..	718
in children. Stern.....	575
Goffe. Abdominal and vaginal operations for relief of fibromyomatous	
tumors of uterus.....	577, 686
Fibroid tumor of the uterus cause of cancer.....	500
Imperforate hymen.....	118
Gonorrhea, decrease of. Strohmberg.....	705
Grad. General peritonitis.....	134
Graafian follicles, luten-cell changes in, atrophied. Seitz.....	701
Sarcoma of the uterus; radiotherapy.....	599, 690
Groves. Operation for cure of vaginal cystocele.....	408
Gruels, standardized. Chapin.....	855
Gynecologist, problems presented to the. Chambers.....	274
Gynecology, sphere of. Bovée.....	I

H

	PAGE
Haggard. Encephalo-meningocele	281
Hall. Cancer of the uterus	271
Hand, rachitic. Koplik	430
Harelip or cleft palate, undeveloped tooth as forerunner of. Lucas ..	429
Head, fetal, measurement of. Stone	242
Heart dilation in diphtheria. Dietlen	860
Heart strain in growing boy. Lambert	857
Hematoma of the ovary. Tate	278, 653
Hematometra. Mellish	60
Hemorrhage, accidental. Macan	416
in eclampsia. Tobenstine	700
frequency of, in fibroma of the uterus. Pace	563
gastrointestinal, of the newborn. Lop	427
intraperitoneal. Boldt	505
obstetric treatment of. Brodhead	183
of syphilitic origin in the newborn. Wilson	426
Hemorrhage, accidental, abdominal hysterectomy for. Targett	845
Hernia of the ureter. Carli	853
Hernia, treatment of, in young children. Mummery	141
strangulated inguinal, in an infant. Lucas	142
strangulated, in infants. Bidwell	424
Hessert. Perforation of the uterus during curettage	26, 124
Holden. Results of ventrosuspension of the uterus at the Johns Hop- kins Hospital	469
Holmes. Cesarean section in late labor	732
Gonococcus infection in children	547
Hand sterilization	532
Hypospadias and cryptorchidism	526
Horsley. Uniting intestines	261
Hirst. Cases of extrauterine pregnancy	585
vaginal atresia complicating labor	641, 676
Hubbard. Cesarean section for dystocia following myomectomy	317
Hydramnion, experimental production of. Bibergeil	851
Hydrocephalus: Drainage of ventricles	576
Hydrosalpinx, double. Watkins	663
Hymen, imperforate. Goffe	118
histology of. Arcangelis	561
Hypospadias and cryptorchidism. Holmes	526
Hypotonia of muscles in children. Spiller	864
Hysterectomy, abdominal, for hemorrhage. Targett	845
Hysterectomy, abdominal, ligation of iliac vessels in. Merletti	563
for carcinoma of the cervix uteri. Watkins	386
supravaginal. Boldt	370
supravaginal, for fibroids, cases. Tate	282
vaginal. Boldt	370
vaginal, in the puerperium for sepsis. Lea	407
supravaginal, for fibromyomata. Stone	839
vaginal, for cancer of the pregnant uterus. Condamin	849
Condamin	849
Hysterosalpingo-oophorectomy for ovarian abscess. Boldt	365

I

plantation, metastatic of carcinoma in vagina. Schumann	644, 675
strangulated inguinal hernia in. Lucas	142
care of, premature. Morse	589, 687
cutaneous angioma in. Besson	140

	PAGE
Infection, acute puerperal; hysterectomy. Berruti.....	849
Infection, gonococcus, in children. Holt.....	547
intestinal by the bacillus dysenterea in infants. La Fetra and Howland	287
puerperal, blood in. Potocci and Lucasse.....	432
typhoidal, of ovarian cyst. Zantschenke.....	419
Infections, puerperal, investigation into causation of; results. Foulerton and Bonney	402, 403
Infectivity of Scarlet fever. Pugh.....	861
Inflammation, pelvic. Dunning.....	214
tubo-ovarian; abscess on right side. Boldt.....	370
Innervation of the female genital organs. Yung.....	562
Inoculation, prophylactic, with diphtheria antitoxin; results. Wesaner.	860
Insanity, typhoidal, in childhood. Edsall.....	711
Insufficiency, acute myocardial. Forchheimer.....	574
Insurance, childlife	717
Intestine, small, resection of. Hessert	26
Intestines, method of uniting. Horsley.....	261
Intussusception. Cole	713
Irrigator, vesical. Wetherill.....	42

J

Jacobson. Axistraction in obstetric practice.....	290
Johnson. Effect of suspensio-uteri on pregnancy and labor.....	273

K

Kanavel. Varicose veins of the broad ligament.....	480
Kelly. Uterine curette	662
Kemp. Radioactive solutions.....	254
Kerr. Cesarean section in cases of contracted pelvis.....	721
Keyes. Sequelæ and treatment of abortion.....	348, 357
Kidney, decortication of the, prolapse of the organ. Stone.....	394
nephro-ureterectomy for tubercular. Reynolds.....	244
Koplik's spots in the diagnosis of measles. Muir.....	141
Kuntz. Extrauterine pregnancy during chloroform anesthesia.....	387

L

Labor experiments concerning causes of onset of. Blumreich.....	416
premature, induction of, for contracted pelvis. Hahl.....	416
tupture of the lateral walls of the vagina during. Lutaud.....	697
use of ergot during. Prüsmann.....	559
vaginal atresia, complicating. Hirst.....	641, 676
and ventral fixation. Dickinson.....	238
precipitate. Yarros	822
Lacerations, perineal, suture of. Rose.....	560
Laparotomy, to free adhesions. Dickinson.....	238
Lea. Vaginal hysterectomy in the puerperium for sepsis, due to sup- puration of myoma	407
Lee. Treatment of vaginitis by yeast.....	825

	PAGE
Leicester. Chyluria complicating pregnancy.....	691
Lewers. Calcified tumor in Douglas's pouch.....	846
pregnancy in a uterine cornu.....	692
Lewis. Fibromyomata of the uterus.....	342
specimens of exencephalia.....	202
Liell. Repeated tubal pregnancy.....	762
Ligament, round, suspension of the uterus by the. Bardesen.....	419
Ligation. Congdon.....	47
systematic, of the ilias vessels procedure in abdominal hysterectomy; advantages. Merletti.....	563
Liver, anatomopathological alterations of the, in syphilis. Grassi.....	565
Lockyer. Carcinoma of the ovary. Lockyer.....	138
Development and retrogression of the corpus tuteum.....	843
Long. Enterostomy.....	266
Lungs, postoperative complications involving the. Miller.....	445, 545
Luteum, corpus, development and receding of the. Lockyer.....	843

M

Mallett. Causes of death following abdominal operations.....	515
Manton. Case of tubercular peritonitis.....	195
Martin. Uncomplicated varicose veins of the female pelvis.....	528
Marx. Fibroid tumors and pregnancy.....	217
Mayo. Gallstone.....	265
McLean. Fibrosarcoma of ovary.....	807
Teratoma.....	808
McMurtry. Treatment before and after abdominal section.....	269
McReynolds. Use and abuse of uterine curette.....	773
Measles, experimental. Hektoen.....	861
Measles, Koplik's spots in the diagnosis of. Muir.....	141
without rash. Salzer.....	574
Measurement, antepartum, of the fetal head. Stone.....	242
Mellish. Physometra; hydrometra; hematometra.....	60
Meningitis, cerebrospinal. Huber.....	862
cerebrospinal, urinary climation in. Loeper.....	863
conditions mistaken for. Baumann.....	719
posterior basic. Koplik.....	710
epidemic cerebrospinal, treatment of. Lenhartz.....	863
Menorrhagia. Tredgold.....	421
Menstruation, immature red blood cells during. Soli.....	852
Metrorrhagia, cause of. Boldt.....	368
Milk, raw or cooked, use of. Brunig.....	565
Miller. Post operative complications involving the bronchi, lungs, etc.	445, 545
primary varicocele.....	492
transverse presentation requiring decapitation.....	685
vaginal Cesarean section.....	277
varicose veins of the female pelvis.....	480
Monster, dicephalic.....	526
Moran. Indications for Cesarean section.....	320
Morphology of the diphtheria bacillus. Saul.....	718
Morse. Care and feeding of premature infants.....	589, 687
Murphy. Advances in renal surgery.....	276
Myofibroma of the anterior cervical wall. Dudley.....	305
degenerating. Boldt.....	370
intraligamentous, cases; puerperal sepsis. Boldt.....	367
mectomy. Hubbard.....	317

N

	PAGE
Nails, finger, changes in, after scarlet fever and measles. Feer.....	430
Neonatorum, icterus, with purpura. Talley.....	575
Nephrectomy for pyonephrotic kidney. Boldt.....	369
for tuberculosis of kidney. Vineberg.....	242
Nephroureterectomy, for tubercular disease. Reynolds.....	244
Nephritis, chronic, decapsulation of the kidney for. Caille.....	424
of pregnancy. Stewart.....	74
puerperal. Torindo.....	698
Nephritis, experimental hydramnion in. Bibergeil.....	851
Neuritis, multiple, of pregnancy. Oettinger.....	288
Nicolson. Celluloid plates for openings in skull.....	270
Nocturnal incontinence of urine, treatment of. Cantas.....	431

O

Obstruction, intestinal. Talley.....	263
intestinal. Brothers.....	113
intestinal, deaths from, after abdominal section. Brettauer....	508
valvular, in the urethra. Morton.....	420
Oliver. Typhoid fever and appendicitis.....	274
Operations, abdominal, causes of death following. Polk.....	506
abdominal, causes of death following. Mallett.....	515
abdominal, shock and hemorrhage as causes of death follow- ing. Barrows.....	511
abdominal and vaginal, for relief of tumors of the uterus. Goffe.....	577
Alexander-Adams, technique of. Fehling.....	564
aseptic, technic of. Byford.....	281
for cystocele. Wood.....	223
radical vaginal. Boldt.....	369
Oppenheim, congenital muscular atonia of. Berti.....	566
Organs, bloodproducing, during pregnancy and puerperal period. Varoldo.....	846
Organs, genital, innervation of the female. Yung.....	362
Otitis, acute, in children. Kerley.....	429
Ovaries, conservative operation on the. Cockenower.....	422
double fibromata of the. Emmet.....	237
Ovariectomy during pregnancy. Andebert.....	558
vaginal. Bürger.....	564
Ovary, carcinoma of the. Lockyer.....	138
cyst of the. Thompson.....	87, 128
fibrocystic degeneration of the. Boldt.....	368
hematoma of the. Tate.....	278, 653
Ovary, fibrosarcoma of. McLean.....	807
Ozonotherapy and blood changes in pertussis. Muggia and Bertolotti.	715

P

Paddock. Anencephalus.....	819
Paddock. Tubal abortion; specimen.....	522
Pancreas, cystadenoma of the. Dunning.....	101
Panhysterectomy. Boldt.....	367, 370
abdominal, uterus removed by. Boyd.....	137

	PAGE
Paralysis, facial and hypoglossal, after labor. Stein.....	856
Paralysis, progressive, pathology of. Campana.....	712
Paraplegia, partial diphtheritic. Aubertin and Babonneix.....	859
Parasites of varicella. Korté.....	719
Parathyroidine, treatment of eclampsia in pregnancy by. Vasale.....	699
Partridge. History of obstetric forceps.....	765
Paul Portal, life and works of. Cumston.....	779
Pedicle, torsion of ovarian, which simulated appendicitis.....	395
twist of the. Brothers.....	212
Pelves, contracted, application of forceps in. Sothoron.....	336
contracted, induction of premature labor for. Hahl.....	416
female, uncomplicated varicose veins of the. Martin.....	528
female, varicose veins of the. Miller and Kanavel.....	480
Pelvic diseases of insane women. Broun.....	208, 256
Pelvis, increase in size of the, by pubiotomy. Van Cauvenberge.....	848
Perforation of the living child. Katz.....	850
Peritonitis, acute, general, management of. Sherrill.....	275
general. Grad.....	134
tubercular, case of. Manton.....	195
tubercular, surgical treatment of, cases. Stokes.....	279
Pertussis, blood, changes in. Muggia and Bertolotti.....	711
Pessary, stem, use of the. Carstens.....	421
Physometra. Mellish.....	60
Pinkham. Phantom tumor.....	688
Placenta, premature detachment of the. Yarros.....	822
Placenta, transmissibility of microorganisms by. Yovane and Chearolanza.....	700
Plates, celluloid, for openings in skull. Nicolson.....	270
Polk. Causes of death following abdominal operation.....	506
Polyuria in meningitis. Loeper.....	863
Positions, mentoposterior. Reed.....	615, 664
Pouch, Douglas's, calcified tumor in. Lewers.....	846
Pregnancy, bloodproducing organs during. Varoldo.....	846
Pregnancy with anomaly. Besta.....	702
broad ligament, sac and fetus of a. Stone.....	683
chyluria complicating. Leicester.....	69
complicating fibroids. Basham.....	69
extrauterine. Runge.....	415
extrauterine, cases. Hirst.....	535
extrauterine. Potocki and Bender.....	432
extrauterine. Ferre.....	288
extrauterine, rupture during chloroform anesthesia. Kuntz....	387
extrauterine and intrauterine. Vineberg.....	236, 689
extrauterine, cases of; symptoms. Boldt.....	363
and fibroid tumors. Marx.....	217
interruption of, with bougie. Jacoby.....	558
and labor, albuminuria and nephritis of. Stewart.....	74
and labor, effect of suspensio-uteri on. Johnson.....	273
metabolic changes during. Hahl.....	700
multiple neuritis of. Oettinger.....	288
nephritis in. Torindo.....	698
ovariotomy during. Andebert.....	558
pyelitis complicating. Spalding.....	192
repeated tubal. Liell.....	762
tetany in. Völker.....	432
toxemia of. Ewing.....	145
tubal, rupture of. Dodds.....	521
in a uterine cornu. Lewers.....	692

	PAGE
Presentation, transverse, requiring decapitation. Miller.....	685
Prognosis, maternal and fetal, in infection of the amniotic fluid. Cora..	699
Prolapse, intractable, operation for. Martin.....	421
Prolapse of the uterus. Henrotay.....	852
Prostitution in Helsingfors. Cedercrentz.....	564
Prostitution in Paris. Butte.....	854
Proteids, introduction of, by way of stomach. Ganghofner and Langer.	717
Pseudoascites in ovarian tumors. Hörmann.....	853
Psychoses, postpartum. Picqué.....	560
Pubiotomy, indications for.....	848
Puerperium, morbidity in the, after birth of macerated fœti. Kothen..	416
Puncture, lumbar, in eclampsia. Henkel.....	558
Purgatives before and after abdominal section. Stone.....	268
Pyelitis complicating pregnancy. Spalding.....	192
Pyometra. Mellish.....	60
Pyosalpinx, treatment of. West.....	811

R

Radioactive solutions. Kemp.....	254
Radiography; results after examination, by Lovett and Brown.....	864
Radiotherapy. Grad.....	599
Radius, bilateral separation of lower epiphyses of the. Walker.....	575
Reed. Criminal abortion.....	391
Mentoposterior positions.....	615, 664
Treatment of eclampsia.....	331
Reduction, bloodless, of dislocation of hip joint. Loachimsthal.....	713
Reflex, abdominal cutaneous, in typhoid and appendicitis. Sicord.....	431
Resection of the uterus and broad ligament, with thrombosed ves-	
sels.....	368
Reviews. American Gynecological Society, Transactions of, Vol. XXIX	413
Battle. Surgery of the Disease of the Appendix Vermiformes	
and Their Complications.....	413
Binnie. Manual of Operative Surgery.....	412
Davis. Treatise on Obstetrics.....	410
Edebohls. Surgical Treatment of Bright's Disease.....	413
Edinburgh Obstetrical Society. Transactions of, Vol. XXIX..	413
Garregues. Gynecology, medical and surgical.....	693
Gould. Dictionary of New Medical Terms.....	414
Hare. Progressive Medicine. Vol. IV.....	286
Hart. Manual of Gynecology.....	694
Holmes. Appendicitis.....	412
Judson. Influence of Growth on Congenital and Acquired De-	
formities.....	696
Lea. Diseases of the Digestive Tract and Allied Organs.....	286
Walker. Beauty Through Hygiene.....	414
Wilder. Duplicate Twins and Double Monsters.....	696
Reynolds. Nephro-ureterectomy for tubercular disease.....	244
Rheumatism, acute articular, in children. Baginsky.....	572
manifestations of, in childhood. Burnet.....	573
Robb. Diagnosis of cancer of the fundus.....	92
Rosnow. Hand sterilization.....	440
Rupture of cervix and uterine segment. Boldt.....	505
of the lateral walls of the vagina during labor. Lutaud.....	697
of the uterus. Valenta.....	703
of tubal pregnancy during examination. Dodds.....	521

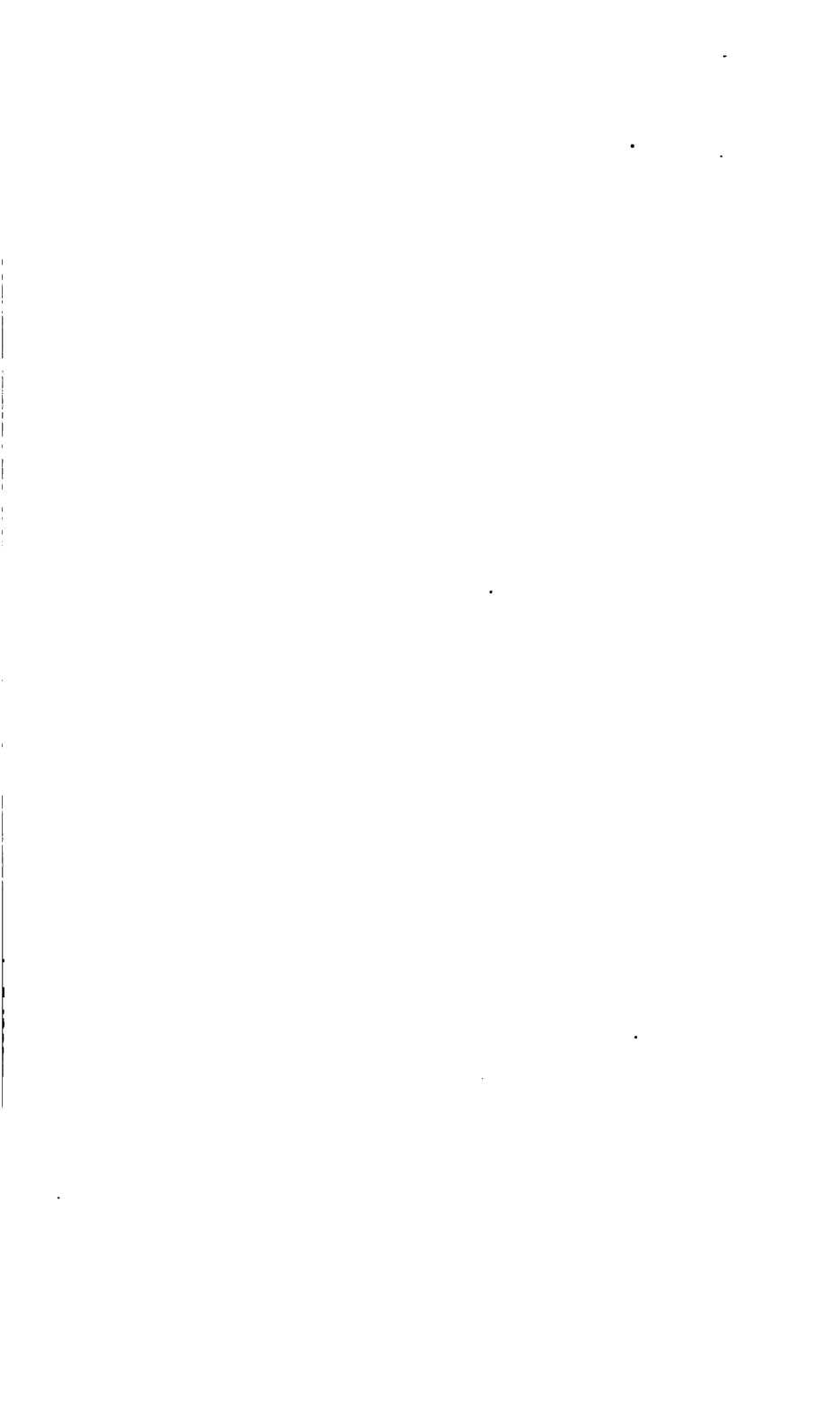
S

	PAGE
Sarcoma, grapelike, of cervix uteri. Williamson	692
of the uterus. Grad.....	599, 690
Schiller. Yeast treatment of vaginitis and endocervicitis.....	635
Schumann. Metastatic implantation in the vagina.....	644, 675
Scrofulo-tuberculous, affections in children. Kiew.....	714
Scurvy, infantile. Morse.....	709
Seborrhea, hereditary. Jacquet and Rondeau.....	855
Section, abdominal and vaginal Cesarean; cases.....	827
Section, abdominal. Sutcliffe.....	58
abdominal. Boldt.....	505
abdominal, death from intestinal obstruction after. Brettauer...	508
abdominal, purgatives before and after. Stone.....	268
abdominal, treatment before and after. McMurtry.....	269
Cesarean, cases of. De Lee.....	738
Cesarean, for dystocia, following myomectomy. Hubbard.....	317
Cesarean, following ventral fixation. Smith.....	477
Cesarean, indications for; cases. Moran.....	320
Cesarean, in late labor. Holmes.....	732
Cesarean, operation of, in cases of contracted pelvis. Kerr.....	721
Cesarean, repeated. Leuwen.....	431
Cesarean, vaginal. Miller.....	277, 701
Sepsis, puerperal. Vineberg.....	374
Sepsis, puerperal. Boldt.....	367
Septicemia, puerperal, prevalence of. Warren.....	301
Serum therapy of puerperal fever. Peham.....	560
Sherrill. Management of acute genital peritonitis.....	275
Shoemaker. Technique of ventrosuspension.....	541
Signs, physical in infants and children, Hamill and Le Boutillier....	856
Sinclair. Glass vaginal drainage tube.....	285
Skull, celluloid plates for openings in. Nicolson.....	270
percussion of the.....	576
Smallpox. Korté.....	719
Smith. Cesarean section following ventral fixation.....	477
Repair of injury to the ureter; transplantation and suturing; cases	752
Soda, bicarbonate of, added to infants' food. Pisek.....	719
Sothoron. Application of forceps in contracted pelves.....	336
Spalding. Pyelitis complicating pregnancy.....	192
Spencer. Cancer of the cervix.....	135
Galvanocautery	138
Spine, common deformities of the. Taylor.....	143
Spleen, wandering, simulating an ovarian tumor. Taylor.....	408
Stenosis, pyloric, in infancy. Shaw and Elting.....	566
Sterilization, hand, with reference to the use of oil of cloves. Web- ster	434, 440, 532
Stewart. Albuminuria and nephritis of pregnancy and labor.....	74
Stokes. Pathogenesis of peritonitis.....	279
Stone. Cancer of the uterus.....	840
Decoration of the kidney for prolapse of the organ.....	394
Ectopic gestation.....	397
Measurement of fetal head.....	242
Purgatives before and after abdominal section.....	268
Sac and fetus of a broad ligament pregnancy.....	683
Thickened ureter.....	399
Torsion of ovarian pedicle which simulated appendicitis.....	395
Supravaginal hysterectomy for fibromyomata.....	839
Strain of the heart in growing boys. Lambert.....	857
Stricture of the ureter. Vineberg.....	242
Abdominal gestation.....	282

	PAGE
Surgery, gynecology and abdominal. Hitschmann.....	418
renal, advances in. Murphy.....	276
Suspension of the uterus by the round ligament. Bardesen.....	419
Suspensio-uteri, effect on pregnancy and labor. Johnson.....	273
Sutcliffe. Removal of cyst and fetus from uterus.....	58
Sutton. Tuberculous disease of the body of the uterus.....	409
Suture. Congdon	47
end-to-end. Smith.....	752
peritoneal, after extirpation of the uterus.....	706
Syphilitic hemorrhage in the newborn. Wilson.....	426
Syphilis, congenital infantile, alterations of the liver in. Grassi.....	565
infantile, treatment of. Gott heil	428

T

Tampons, glycerinated vaginal. Sayanno.....	706
Targett. Abdominal hysterectomy for accidental hemorrhage.....	845
Tate. Dermoid cyst of the ovary.....	137
Hematoma of the ovary.....	278, 653
Supravaginal hysterectomy for fibroids.....	282
Taylor. Wandering spleen simulating an ovarian tumor.....	408
Temperature, sudden elevation of, during labor. Coe.....	809
Tension, arterial, a cause of eclampsia. Mynlieff.....	847
Teratoma. McLean	808
Tetanus, puerperal. Lop.....	432
Therapy of urogenital fistula in women. Vertes.....	851
Thompson. Dermoid cyst of the ovary.....	87, 128
Thrombosis in the puerperium. Richter.....	720
Tissue, pelvic connective, dermoid of the. Vineberg.....	235
Tobacco poisoning; relations to reproductive function. Pieraccini....	846
Torsion of parovarian cysts. Vanverts.....	705
Toxemia, acute diphtheritic, death in. Bolton.....	861
Toxemia, gastrointestinal. Rachford.....	569
of pregnancy. Ewing.....	145
Transmissibility of microorganisms from mother to fetus by placenta.	
Yovane and Chearolanza.....	700
Tube, fallopian, free bodies in. Fedorow.....	432
glass vaginal drainage. Sinclair.....	285
Tuberculosis, early, of the kidney. Vineberg.....	242
human and bovine, relation of. Bovaird.....	863
study of cases of, in children. Adams.....	742, 842
Tumors, fibromyomatous, of the uterus, operation for. Goffe.....	577, 686
fibroid, of the uterus, as a cause of cancer. Goffe.....	500
fibroid. Marx.....	217
ovarian, simulated by wandering spleen. Taylor.....	408
phantom. Pinkham.....	688
Tumors, ovarian, pseudoascites in. Hörmann.....	853
Ureter, effect of tubal abscess on. Young.....	707
repair of injury to the; cases. Smith.....	752
stricture of the. Vineberg.....	242
thickened. Stone.....	399
transplantation of the. Smith.....	752
hernia of the. Carli.....	853
Urethra, valvular obstruction in the. Morton.....	429
Uterine, carcinoma. Boldt.....	370
cervix, carcinoma of the. Watkins.....	386
cervix, grapelike sarcoma of the. Williamson.....	692



	PAGE
Webster. Hand sterilization.....	434
Wells. Shall gallstones or pathological conditions be treated when operating for pelvic disease?.....	376
Wetherill. Self-retaining catheter and vesical irrigator.....	42
West. Prophylaxis and treatment of pyosalpinx.....	811
Williamson. Grapelike sarcoma of the cervix uteri.....	692
Origin of adenomyoma of the uterus.....	271
Women, insane, pelvic diseases of. Brown.....	208, 256
Wood. Operation for cystocele.....	223

X

X-ray of renal calculi. Brown.....	253
------------------------------------	-----

Y

Yeast, treatment of vaginitis by. Lee.....	825
Yarros. Precipitate labor; premature detachment of the placenta.....	822

MELLISH, ERNEST J., El Paso, Texas.
MILLER, G. BROWN, Washington, D. C.
MILLER, S. M., Peoria, Ill.
MORAN, JOHN F., Washington, D. C.
MORSE, JOHN LOVETT, Boston, Mass.
PARTRIDGE, H. G., Providence, R. I.
REED, CHARLES B., Chicago, Ill.
ROBB, HUNTER, Cleveland, Ohio.
ROSNOW, E., Chicago, Ill.
SCHILLER, HELIODOR, Chicago, Ill.
SCHUMANN, EDWARD A., Philadelphia, Pa.
SMITH, A. LAPHORN, Montreal, Canada.
SMITH, MARY ALMIRA, Boston, Mass.
SOTHORON, ELMER, Washington, D. C.
SPALDING, ALFRED BAKER, San Francisco, Cal.
STEWART, ROBERT W., Cincinnati, Ohio.
SUTCLIFFE, J. A., Indianapolis, Ind.
TATE, MAGNUS A., Cincinnati, Ohio.
THOMPSON, WILLIAM M., Chicago, Ill.
VOORHEES, JAMES D., New York.
WARREN, STANLEY P., Portland, Me.
WEBSTER, J. CLARENCE, Chicago, Ill.
WETHERILL, HORACE G., Denver, Col.
WOOD, JAMES C., Cleveland, Ohio.
CHICAGO GYNECOLOGICAL SOCIETY.
COLLEGE OF PHYSICIANS OF PHILADELPHIA.
NEW YORK ACADEMY OF MEDICINE.
NEW YORK OBSTETRICAL SOCIETY.
OBSTETRICAL SOCIETY OF LONDON.
SOUTHERN SURGICAL AND GYNECOLOGICAL ASSOCIATION.
WASHINGTON OBSTETRICAL AND GYNECOLOGICAL SOCIETY.
WOMAN'S HOSPITAL SOCIETY.







3 2044 081 506 859